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STOPPING WATER POLLUTION AT ITS SOURCE

MISA

Municipal/Industrial Strategy for Abatement

THE PUBLIC REVIEW OF THE DRAFT EFFLUENT MONITORING REGULATION FOR THE PETROLEUM REFINING SECTOR AND THE MINISTRY OF THE ENVIRONMENT'S RESPONSE TO IT

Ontario

Ministry of the Environment

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MUNICIPAL-INDUSTRIAL
STRATEGY FOR ABATEMENT

(MISA)

The Public Review of the Draft Effluent Monitoring Regulation for the Petroleum Refining Sector and the Ministry of the Environment's Response To It

(July 1988)

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FOREWORD

The draft effluent monitoring regulation for the petroleum refining sector was released in July 1987 for public comment. Comments were received from environmental interest groups, government agencies, industrial associations, industries, professional consulting companies, private citizens, research companies and a university. The Ministry of the Environment's responses to these comments are provided in this document.

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1.0 SUMMARY

1.1 MISA PROGRAM SUMMARY

The goal of the Municipal-Industrial Strategy for Abatement (MISA) Program is the virtual elimination of toxic and persistent contaminants discharged to Ontario's waterways through the systematic reduction of all waste loadings. MISA effluent monitoring and effluent limits regulations are issued under Section 136 of the Environmental Protection Act.

Further information on MISA is available in the White Paper entitled "A Policy and Program Statement of the Government of Ontario on Controlling Municipal and Industrial Discharges into Surface Waters" (June 1986) and "The Public Review of the MISA White Paper and the Ministry of the Environment's Response To It" (January 1987).

The first phase of the regulatory program for each industrial sector is the implementation of effluent monitoring regulations developed with federal government, industry and public participation. These regulations will require monitoring of point source aqueous discharges to the natural environment by all plants within each industrial sector.

The objective of the effluent monitoring regulations is to establish a data base on effluent quality with emphasis on toxic and persistent contaminants. The data base will reflect all operating conditions (including upset conditions) within a standardized framework of sampling, analysis, quality assurance and quality control (QA/QC) and Ministry audit.

The compiled data base, along with the Best Available Technology Economically Achievable (BAT(EA)), will be evaluated and applied to the development and implementation of an effluent limits regulation for each industrial sector.

1.2 FEDERAL, INDUSTRIAL AND PUBLIC PARTICIPATION

The Joint Technical Committee (JTC), with representatives from the federal and provincial governments and the petroleum refining industry, reviewed available pre-regulation and historical data and made recommendations regarding the program and the content of the effluent monitoring regulation.

Public review of the draft effluent monitoring regulations is initially provided by the MISA Advisory Committee (MAC), which draws its membership from knowledgeable members of the public, environmental interest groups and individuals who have expertise in various environmentally related disciplines. MAC was set up to provide an independent review of the regulatory program and to provide the Minister with advice and comments on the regulations being developed.

The Ministry's commitment to ensure public involvement in the MISA development process has been shown through the public review of the White Paper (June 1986) and "The Effluent Monitoring Regulation for the Petroleum Refining Sector (Draft)" (July 1987). The public will also be given the opportunity to review all of the draft effluent monitoring regulations under the MISA program.

1.3 SUBMISSIONS ON THE DRAFT REGULATION

"The Effluent Monitoring Regulation for the Petroleum Refining Sector (Draft)", referred to as the draft regulation in this report, was released for public comment in July 1987. Comments were received from ten private citizens, eight environmental interest groups, six government agencies, three industries, three industrial associations, two research companies, two professional consulting companies and one university. In total, there were 35 submissions of public comments (see Appendix 3.1 for a listing of the submissions).

All of the groups that submitted comments have expressed strong support for the MISA program and commended the Ministry in its initiative in establishing the program.

The Ministry appreciates the effort of all the individuals who made contributions in reviewing and commenting on the draft regulation.

1.4 SUMMARY OF MAJOR ISSUES

Effluent Monitoring Priority Pollutants List (EMPPL)

The major issue raised by the public regarding the EMPPL was that the rationale for promoting chemicals to the EMPPL was not explained. There was also concern that an unfinished and imperfect EMPPL was being used to set the effluent monitoring regulations. Environmental interest groups felt that a lack of information was not a valid basis for exclusion of a chemical from the EMPPL. They suggested that the time and resources of the Ministry should be committed to develop validated analytical protocols for those chemicals on the EMPPL currently without them.

The Ministry developed a screening process to identify a list of contaminants of concern for Ontario. The 1987 list has been finalized and is published under the title "Effluent Monitoring Priority Pollutants List 1987". The 1987 EMPPL includes 179 chemicals or chemical groups derived from an assessment of a candidate list which considered 1500 chemicals. Chemicals were excluded from the candidate list based solely on toxicity and exposure evaluation.

Only 133 of the 179 chemicals on the EMPPL currently have proven and accepted analytical principles and protocols. The Ministry's Laboratory Services Branch is developing analytical principles and protocols for the remaining chemicals. As these become available, the monitoring lists for each sector may be updated where appropriate. However, it is unlikely that the requirements will change during the 12 month effluent monitoring regulation.

The Ministry has formed the Priority Substances Advisory Committee (PSAC) whose mandate includes the further development of the EMPPL.

Acute Toxicity Testing

All of the participants who submitted comments on the subject of acute toxicity testing agreed with MAC's recommendations to retain rainbow trout testing and to add the more sensitive Daphnia magna acute lethality toxicity testing. There were opposing opinions on the timing of the implementation of the Daphnia magna test.

The Ministry has included a Daphnia magna acute lethality toxicity test in the effluent monitoring regulation. The protocol for the Daphnia magna test was widely distributed in November and was reviewed by external experts. All comments have been carefully evaluated, addressed and the protocol has been finalized. A proposed toxicity study utilizing Daphnia magna suggested by the Ministry as part of the pre-regulation monitoring program was not adopted.

Listing/Delisting

All participants agreed on the importance of the listing/delisting process and the necessity to develop a mechanism for it. While the environmental interest groups wanted to add more chemicals to the effluent monitoring list, industry wanted to monitor only for those parameters expected to be in their effluents.

The PSAC is developing the listing/delisting mechanism for the EMPPL. There will also be a listing/delisting mechanism developed for the sector effluent monitoring lists.

Self-Monitoring/Auditing

The environmental interest groups and some private citizens were concerned about the authenticity of data gathered by industry through the monitoring period. They suggested that the Ministry allocate sufficient resources to undertake extensive monitoring and an auditing process of its own.

A comprehensive Ministry audit program for MISA is being developed to ensure compliance with the effluent monitoring regulations. The audit program will partly consist of unannounced site visits by the Ministry. Audits will also include inspections to ensure appropriate protocols are in place, random sampling and analysis of effluent streams. The first audit will be conducted at the beginning of the monitoring period to ensure that all the sampling and flow measurement devices are installed, as well as to check the laboratories and ensure that all the protocols are in place. In addition, there will be a minimum number of random inspections for compliance regarding sampling and reporting. This does not preclude additional inspections if and when warranted.

Public Involvement

The environmental interest groups felt that the public should be involved in the various stages of the MISA program (listing/delisting, auditing/monitoring and reviewing monitoring results). They also felt that the comment period of 30 days was insufficient for a serious consideration of documents as important as the MISA regulations.

The Ministry supports public involvement in the development of the MISA program. Public involvement is reflected through the MISA Advisory Committee (MAC), which reviews all documents developed under the MISA program. Auditing is the responsibility of the Ministry but the level of audit will be reviewed with the MISA Implementation Committee. The MISA Implementation Committee has members from all branches of the Ministry and was formed to facilitate the delivery of all of the MISA regulations. Results from auditing of final effluents will be available to the public.

The Ministry recognizes that a review period of 30 days may not be sufficient for public review of MISA regulations and supporting documents. Therefore, the comment period for future MISA regulations will be extended to 60 days.

Laboratory Accreditation System

All participants supported MAC's recommendation to determine interlaboratory variability.

The MISA effluent monitoring regulations place the onus on industry to exert due diligence in the selection of laboratories. The regulations also define the types of quality assurance activities expected of both industry and the laboratory. The sampling QA/QC data must be reported to the Ministry. The laboratory's QA/QC data must be retained by the discharger for audit by the Ministry as the need arises.

1.5 THE EFFLUENT MONITORING REGULATION - PETROLEUM REFINING SECTOR

The Ministry has carefully reviewed all the public comments received, as well as the MISA Advisory Committee's (MAC's) comments and recommendations. After due consideration and lengthy discussions with the Joint Technical Committee (JTC), several amendments have been made to the draft regulation.

In order to expedite the development of the effluent monitoring regulations for other sectors, a major change in the format of the draft regulation has been made. The draft regulation has been split into two regulations: general and petroleum refining sector.

Ontario Regulation 358/88, the Effluent Monitoring Regulation - General (referred to as the General Regulation in this report), will apply to all the sectors. It consists of those parts of the draft regulation which are common to all of the sectors: principles and protocols of sampling, analysis, flow measurement and procedures for toxicity testing and reporting.

Ontario Regulation 359/88, the Effluent Monitoring Regulation - Petroleum Refining Sector (referred to as the Petroleum Regulation in this report) describes the duties of the direct dischargers in the petroleum refining sector. The information generated by the requirements of this regulation will be used to establish a data base on effluent quality for the petroleum refining sector.

1.6 REPORT FORMAT

There were many issues raised in the comments submitted on the draft regulation. The issues were grouped by subject and if the same comment was made by several organizations, the comments were paraphrased to take into consideration all the aspects of the various comments. The type of organization or group which provided the comment is indicated in brackets next to the comment number. The responses were prepared by Ministry staff directly involved in the area of concern.

1.0 SOMMAIRE

1.1 APERÇU DE LA SMID

L'objectif de la SMID, ou Stratégie municipale et industrielle de dépollution, consiste à éliminer à toutes fins utiles, grâce à la réduction systématique de leur charge, les polluants toxiques et persistants qui sont déversés dans les cours d'eau de la province. Les règlements sur la surveillance et la limitation des effluents qui en découleront sont autorisés par l'article 136 de la *Loi sur la protection de l'environnement*.

On trouvera de plus amples renseignements sur la SMID dans le livre blanc intitulé « Politique et programme du gouvernement de l'Ontario pour le contrôle des déversements de déchets municipaux et industriels dans les eaux de surface » (juin 1986) et dans le document paru sous le titre « The Public Review of the MISA White Paper and the Ministry of the Environment's Response To It » (janvier 1987).

Pour chaque secteur industriel, la première étape du nouveau programme sera la mise en oeuvre de règlements sur la surveillance des effluents, élaborés en collaboration avec le gouvernement fédéral, l'industrie et la population. Ces règlements exigeront des intéressés qu'ils contrôlent les eaux usées que leurs usines déversent dans le milieu naturel.

Les règlements ont pour but d'établir une base de données sur la composition des effluents, et plus particulièrement sur les contaminants toxiques et persistants. Cette base tiendra compte de toutes les conditions d'exploitation, y compris les perturbations, dans le cadre d'un programme uniforme d'échantillonnage, d'analyse, d'assurance et de contrôle de la qualité, et de vérification ministérielle.

La base de données sera évaluée en même temps que les techniques les plus évoluées et abordables pour ensuite servir de point de départ pour l'élaboration et l'application d'un règlement propre à chaque secteur.

1.2 APPORT DU GOUVERNEMENT FÉDÉRAL, DE L'INDUSTRIE ET DU PUBLIC

Le Comité technique mixte, qui réunit les représentants des gouvernements fédéral et provincial ainsi que du secteur pétrolier, a repassé les données dont il disposait sur les tendances et autres éléments à se dégager jusqu'ici, puis a formulé diverses recommandations en ce qui concerne le programme et le contenu du règlement sur la surveillance des effluents.

C'est le Comité consultatif de la SMID, composé de membres informés du public et de groupes de défense de l'environnement ainsi que de particuliers spécialisés dans diverses disciplines se rapportant à l'environnement, qui se charge au début de l'examen public des projets de règlements sur la surveillance des effluents. Ce comité a été créé en vue de permettre un examen indépendant du programme de contrôle et de conseiller le Ministère sur les règlements en voie d'élaboration.

Le Ministère s'est engagé à assurer la participation du public à la mise au point de la SMID, comme en témoignent l'examen public du livre blanc (juin 1986) et du projet de règlement, « The Effluent Monitoring Regulation for the Petroleum Refining Sector » (juillet 1987). La population aura aussi l'occasion de revoir les autres projets de règlements sur la surveillance des effluents qui seront établis en application de la SMID.

1.3 RÉACTIONS AU PROJET DE RÈGLEMENT

La version provisoire de l'« Effluent Monitoring Regulation for the Petroleum Refining Sector », désignée ci-après sous l'appellation de projet de règlement, a été rendue publique en juillet 1987. Dix particuliers, huit groupes de défense de l'environnement, six organismes gouvernementaux, trois industries, trois associations industrielles, deux sociétés de recherche, deux sociétés d'experts-conseils et une université nous ont fait parvenir leurs observations. En tout, nous avons reçu 35 mémoires, dont la liste se trouve à l'annexe 3.1.

Tous ceux et celles qui nous ont fait part de leurs observations soutenaient vigoureusement la SMID et ont félicité le Ministère pour son initiative.

Le Ministère remercie les gens qui ont examiné et commenté le projet de règlement.

1.4 RÉSUMÉ DES PRINCIPAUX SUJETS DE PRÉOCCUPATION

Liste des polluants d'intérêt prioritaire à surveiller dans les effluents

Ce qui préoccupe surtout le public ici, c'est qu'on n'explique pas pourquoi une substance chimique donnée figurerait ou non dans la liste. On craint aussi qu'on ne se serve d'une liste imparfaite, incomplète pour élaborer les règlements sur la surveillance des effluents. D'après les groupes de défense de l'environnement, une substance chimique ne devrait pas être exclue de la liste pour la simple raison qu'on ne dispose pas de suffisamment de renseignements à son égard. Ils ont suggéré au Ministère d'engager temps et ressources à l'établissement de protocoles d'analyse pour les substances qui sont déjà inscrites sur la liste mais pour lesquelles aucun protocole n'existe encore.

Le Ministère a établi une méthode de tri pour dresser la liste des contaminants d'intérêt particulier pour la province. La liste de 1987 est maintenant prête. Publiée sous le titre « Effluent Monitoring Priority Pollutants List 1987 », elle comprend 179 substances chimiques ou groupes de substances chimiques qui ont été inscrits après évaluation d'une liste maîtresse de 1500 produits. Les substances étaient rejetées de celle-ci uniquement en fonction de leur toxicité et de leurs effets en cas d'exposition.

Seulement 133 des 179 substances retenues font actuellement l'objet d'un protocole d'analyse éprouvé. La Direction des services de laboratoire du ministère de l'Environnement s'occupe du cas des substances qui restent. Au fur et à mesure que les divers protocoles manquants seront mis au point, la liste des

polluants à surveiller par les divers secteurs pourra être modifiée en conséquence, le cas échéant. Cependant, il est peu probable qu'on modifie les exigences pendant les douze mois d'application du règlement sur la surveillance des effluents.

Le Ministère a créé le Comité consultatif sur les substances d'intérêt prioritaire. Une de ses tâches consiste justement à affiner la liste mentionnée plus haut.

Analyse de la toxicité aiguë

Tous les participants qui ont fait parvenir leurs commentaires au sujet de l'analyse de la toxicité aiguë étaient d'accord avec les recommandations du Comité consultatif de la SMID. Celui-ci proposait de retenir l'analyse et des truites arc-en-ciel et de la toxicité aiguë de *Daphnia magna*, espèce plus sensible. Par contre, on ne s'entendait pas sur le moment de la mise en oeuvre de cette dernière analyse.

Le Ministère a inclus l'analyse de la toxicité aiguë de *Daphnia magna* dans le règlement sur la surveillance des effluents. Le protocole à son égard a été diffusé largement en novembre et a été revu par des spécialistes indépendants. Toutes les observations ont été soigneusement évaluées, et le protocole est maintenant au point. Le projet d'étude de la toxicité que suggérait le Ministère et qui aurait utilisé comme spécimen *Daphnia magna* n'a pas été retenu. Il aurait été réalisé dans le cadre du programme de surveillance préalable à l'établissement des règlements.

Inscription et retrait

Tous les participants s'entendaient sur l'importance de cet élément et sur la nécessité d'un mécanisme pour son application. Les groupes de défense de l'environnement souhaitaient ajouter davantage de substances chimiques à la liste des substances à surveiller dans les effluents, tandis que l'industrie voulait n'avoir à contrôler que les substances susceptibles d'être présentes dans ceux-ci.

Le Comité consultatif sur les substances d'intérêt prioritaire est en train de mettre au point le mécanisme d'inscription et de retrait pour la liste des polluants à surveiller dans les effluents. Un mécanisme analogue sera élaboré pour chacune des listes sectorielles.

Autosurveillance et vérification

Les groupes de défense de l'environnement et certains particuliers se posaient des questions sur l'exactitude des données recueillies par l'industrie pendant la période de surveillance. Ils ont proposé au Ministère d'allouer suffisamment de ressources pour pouvoir entreprendre son propre programme de surveillance et de vérification.

Le Ministère est en train d'élaborer un programme global de vérification dans le cadre de la SMID, de manière à s'assurer du respect des règlements sur les effluents. Il s'agira tantôt de visites à l'improviste, tantôt d'inspections en bonne et due forme pour veiller à l'application des divers protocoles, tantôt d'échantillonnages au hasard et d'analyses des effluents. La première vérification aura lieu au début de la période de surveillance, car le Ministère voudra s'assurer que les appareils d'échantillonnage et de mesure de l'écoulement sont en place et visiter les laboratoires pour voir si les protocoles sont effectivement en vigueur. En outre, il effectuera un certain nombre d'inspections au hasard afin de vérifier si l'on se conforme aux règlements en ce qui concerne l'échantillonnage et la présentation des rapports. Évidemment, d'autres inspections pourront être effectuées si le besoin s'en fait sentir.

Participation du public

D'après les groupes de défense de l'environnement, le public devrait pouvoir participer aux diverses étapes de la SMID (inscription et retrait de substances chimiques, vérification et surveillance, examen des résultats de la surveillance). Ils jugeaient aussi que la période de 30 jours impartie pour faire part de ses observations était insuffisante, puisqu'elle ne

permettait pas d'étudier sérieusement des textes aussi importants que les règlements d'application de la SMID.

Le Ministère est tout à fait pour la participation du public. Celui-ci contribue au programme par l'entremise du Comité consultatif de la SMID, lequel examine tous les textes découlant du programme. La vérification incombe au Ministère, mais sa fréquence et autres éléments seront revus avec les membres du Comité de mise en oeuvre de la SMID, qui réunit des représentants de chacune des directions du Ministère et qui a été créé pour faciliter l'exécution de tous les règlements de la SMID. Enfin, les résultats de la vérification des effluents finals seront mis à la disposition du public.

Le Ministère sait bien qu'un délai de 30 jours pourrait s'avérer insuffisant pour l'examen des règlements de la SMID et des documents à l'appui. Par conséquent, le délai a été porté à 60 jours pour les règlements à venir.

Accréditation des laboratoires

Tous les participants étaient d'accord pour que l'on établisse les différences qui existent d'un laboratoire à l'autre, ainsi que le proposait le Comité consultatif de la SMID.

Dans le cadre des règlements sur la surveillance des effluents, il revient à l'industrie de choisir avec le plus grand soin les laboratoires. Ces règlements définissent par ailleurs les genres d'assurance et de contrôle de la qualité dont on s'attend et de l'industrie et des laboratoires. Les données d'échantillonnage à cet égard doivent être signalées au Ministère, et celles des laboratoires doivent être conservées par les responsables des rejets pour que le Ministère puisse les vérifier, s'il y a lieu.

1.5 LE RÈGLEMENT SUR LA SURVEILLANCE DES EFFLUENTS - SECTEUR PÉTROLIER

Le Ministère a examiné avec soin les observations du public ainsi que les commentaires et les recommandations du Comité consultatif de la SMID. Après mûre réflexion et de longues discussions avec

le Comité technique mixte, plusieurs modifications ont été apportées au projet de règlement.

Afin d'accélérer l'élaboration d'un règlement analogue pour les autres secteurs, la disposition a été complètement transformée. En effet, le projet a été divisé en deux règlements distincts, l'un d'application générale, l'autre, spécifique au secteur pétrolier.

Le Règlement 358/88 de l'Ontario, l'« Effluent Monitoring Regulation - General » (appelé règlement général dans le présent rapport), s'appliquera à tous les secteurs réunis. Il englobe les parties du projet de règlement qui leur sont communs : les principes et les protocoles d'échantillonnage, d'analyse, de mesure de l'écoulement et les modalités d'analyse de la toxicité et les moyens d'en signaler les résultats.

Le Règlement 359/88 de l'Ontario, l'« Effluent Monitoring Regulation - Petroleum Refining Sector » (appelé règlement sur le secteur pétrolier dans le présent rapport), énonce les obligations des raffineries qui rejettent des substances directement dans les cours d'eau. Les renseignements que ce règlement permettra de produire serviront à l'établissement d'une base de données sur la qualité des effluents du secteur.

1.6 PRÉSENTATION DU RAPPORT

On a soulevé de nombreuses questions à propos du projet de règlement. Elles ont été regroupées par sujet; si le même commentaire revenait, on le paraphrasait de manière à résumer les propos des divers intervenants. Le genre d'organisation ou de groupe qui a fait tel ou tel commentaire est indiqué entre parenthèses à côté du numéro du commentaire. Les réponses ont été préparées par des employés du Ministère qui travaillent directement dans le domaine visé.

2.0 PUBLIC COMMENTS AND MINISTRY'S RESPONSES

2.1 GENERAL/MISCELLANEOUS COMMENTS

Comment 1: (Environmental Interest Groups)

Throughout the implementation of this program, the public should be extensively involved. Other avenues for public involvement include the future listing/delisting process and development of an auditing/monitoring program by the Ministry.

Response:

Public comments are always welcome in the development of any programs under MISA including the listing/delisting process. In addition, public involvement is reflected through the MISA Advisory Committee (MAC), which reviews all documents developed under the MISA program, including the guidelines and procedures of the listing/delisting process as they are developed. All the documents which MAC reviews will be available to the public.

Auditing is the responsibility of the Ministry and the level of audit will be reviewed with the MISA Implementation Committee (MIC). The MIC has members from all branches of the Ministry and was formed to facilitate the delivery of all of the MISA regulations. Results from the auditing of final effluents will be available to the public.

Comment 2: (Environmental Interest Groups)

Thirty days is not adequate time for the public to review documents as detailed and technical as the MISA documents. We urge the Ministry to provide a longer time for such reviews in the future and to provide a better distribution system to get materials out to the public promptly. Most people had to wait at least fifteen days after the release date before receiving the draft regulation.

We were glad the Ministry had granted another thirty days for comment. It is important to have at least 60 days to review a document as important as the MISA regulation.

A longer public comment period is necessary to digest and respond to a complex array of documents, especially since the Effluent Monitoring Priority Pollutants List (EMPPL) was not released separately for public review and comment.

Response:

The Ministry is committed to full and fair public consultation. The comment period for the draft regulation was initially 30 days. Due to concerns about the slow distribution of the draft regulation, the Ministry extended the comment period another 15 days. For those who did not receive the draft regulation until the middle of the month, this 15 day extension restored the original 30 days. For those who received the draft regulation after the middle of the month, the Ministry was willing to accept public submissions even after the full 45

day review period. The Ministry recognizes that distribution of the draft regulation was somewhat slow and has taken measures to ensure the process is more efficient in the future. The Ministry also recognizes that a review period of 30 days may not be sufficient for public review of MISA regulations and supporting documents and will extend the review period to 60 days.

Those interested in receiving copies of future draft effluent monitoring regulations should place their names on the MISA mailing list. To do so, please call the Public Information Centre at (416) 323-4321 between 9:00 A.M. and 5:00 P.M., Monday to Friday.

Comment 3: (Environmental Interest Groups)

The public must have access to the information generated by the MISA regulations. A clause should be added to the reporting section of the regulation stating that all information required by the regulation is available to the public as soon as it is submitted to the Ministry.

Although it is stated that information will be made available to the public, there is no explanation of how it will be available or where it will be available. Unless the Ministry takes on an active role of public education through the media, libraries and other institutions, many of the publications will not reach the public at large.

Response:

The Ontario government has enacted the Freedom of Information and Protection of Individual Privacy Act which provides every person the right of access to information under the control of a government institution. The right of access is granted in accordance with the principle that government information should be available to the public. Therefore, it is not necessary to include this requirement in the effluent monitoring regulations.

The information generated through the effluent monitoring regulations is generally public information and will be available from the Water Resources Branch or the Ministry's Regional Offices (depending on the nature of the request) after verification by the Ministry staff. In addition, the Ministry will issue reports summarizing the monitoring data collected from each sector effluent monitoring regulation. These reports will also be available to the public.

Comment 4: (Private Citizen)

Unless bordering states and provinces should agree to the same policies regarding pollution control as Ontario, pollutants will arrive in Ontario from these sources through air, water and solid waste transport.

Response:

National and international structures are in place to promote harmonization of pollution control policies and ensure the exchange of information. Examples include the International Joint Commission (IJC), the Canadian Council for Resource and Environmental Ministers (CCREM) and the Federal-Provincial Advisory Committee on Occupational and Environmental Health. In addition, a number of agreements and accords

with respect to toxic substances have been negotiated by Ontario with neighbouring states and provinces. At present, some U.S. Great Lakes States have programs that combine a BAT(EA) approach and water-quality based controls. Quebec is currently developing a toxic control program and has held discussions with the Ministry in pursuit of a complementary program to MISA.

Comment 5: (Environmental Interest Group)

Pre-regulation monitoring should not be considered a component of the MISA abatement process.

"Pre-regulation monitoring" has turned the regulation from an exploration of the effluent to an open and shut case of quantifying the known contaminants. Based on (a) the conditions under which the pre-regulation monitoring has been done and (b) maintaining the objectives of MISA, it is unacceptable to allow the effluent monitoring regulation to be narrowed at this stage.

Response:

The Ministry views the pre-regulation monitoring period as a necessary step to developing an efficient and practical regulation. This approach was agreed to by the Ministry and several industrial associations at the beginning of the MISA process and is reflected in the White Paper.

The pre-regulation monitoring program is negotiated with each sector and involves the collection of samples for characterization of the effluent streams. The pre-regulation monitoring program is only one of many pieces of information used to develop the sector effluent monitoring list. Other information used to develop the monitoring requirements come from:

- submission of general information on the site and on the use and release of chemicals;
- site visits to review plant operations and operating data;
- Ministry open characterizations;
- review of historical monitoring data from the site such as from the Upper Great Lakes Connecting Channel Study (UGLCCS), MISA pilot site studies, Niagara River Toxics Study;
- review of generic process data from the USEPA and the Federal Government.

The list of parameters to be analyzed for and the daily, three times weekly, weekly, monthly and quarterly monitoring requirements are all developed after a comprehensive review of the above information.

The industries will be required to carry out periodic characterizations, particularly after there has been a process change that might impact on effluent quality. Further, the Ministry will also be carrying out open characterizations as part of the auditing program.

For the most part, data from representative plants have not been used to delist sector-wide requirements, but to establish plant specific effluent monitoring lists.

Comment 6: (Private Citizen)

All vehicles hauling toxic wastes should be licensed and be required to use special markings.

Response:

All vehicles which haul hazardous or liquid industrial waste must obtain a Certificate of Approval for a Waste Management System under Part V of the Environmental Protection Act. These vehicles must also meet all of the requirements of Regulation 309, the General Waste Management Regulation under Part V of the Environmental Protection Act. Hazardous waste is also regulated as dangerous goods under the Dangerous Goods Transportation Act (provincial) and the Transportation of Dangerous Goods Act (federal), as well as the regulations under these Acts. One of the requirements of this transportation legislation, as well as Regulation 309, is that vehicles transporting dangerous goods be placarded with the appropriate symbol designating the nature of the hazard (e.g. flammable or corrosive).

2.2 EFFLUENT MONITORING PRIORITY POLLUTANTS LIST

Comment 1: (Environmental Interest Group, Private Citizen)

How and where does the public get access to information on the EMPPL?

Response:

All supporting documentation for development of the EMPPL will be available upon request. Requests should be directed to the Hazardous Contaminants Coordination Branch of this Ministry.

Comment 2: (Industrial Association)

The Task Force did not have time to carry out the recommendations listed (p. i and ii). Consequently, the current EMPPL has to stand in the public eye without the benefit of the additional information which could have been gained from the Task Force recommendations. As such, we believe that the existing EMPPL seriously misrepresents and overstates the composition and potential environmental hazards associated with pulp and paper mill effluents.

Response:

The recommendations on pages i and ii of the draft EMPPL document refer to future actions subsequent to the preparation of this edition of the list. These recommendations are being implemented, and the results will be incorporated in future editions.

The MISA Priority Pollutants Task Force does not feel that the "composition and environmental hazards associated with pulp and paper mill effluents" are overstated, since only preliminary information on the composition of the effluents was available at the time the current list was prepared. It is probable that some compounds may be dropped, but it is also probable that a greater number will be added as a result of the Ministry's and industry's pre-regulation monitoring. The concern levels for environmental hazards used for promoting a substance to the EMPPL are adequate for environmental monitoring purposes.

Comment 3: (Industrial Association)

Due to the time constraints, the Task Force was forced to take a number of short cuts ("interim approach").

The hazard assessments should be based on weight-of-evidence approach, rather than a worst-plausible-case approach, the latter of which was frequently used in the development of the present list.

Response:

The interim methodology will be reviewed and the list modified as new information on environmental effects and effluent characteristics becomes available. However, the MISA

Priority Pollutants Task Force felt that the "worst plausible case" approach was reasonable, especially when information on a chemical is minimal. This approach has been used in other jurisdictions also.

Comment 4: (Government Agency)

The staff were impressed with the rationale used to classify and prioritize chemicals for intensive investigation, particularly the hazard assessment ranking system incorporating seven most adverse effect categories.

We concur with the Task Group's recognition that a specific hazard assessment for the MISA program is necessary because of the inherent problems in adapting hazard assessments from other jurisdictions that may have been generated for non-related purposes. The proposed weight-of-evidence approach for hazard assessment rather than the worst plausible approach is both practical and defensible.

The draft report also identifies the lack of an ambient data base for almost all the chemicals of concern. As a national initiative may be appropriate in this area, I would suggest that the data base issues be discussed at the Canadian Council of Resources and Environmental Ministers (CCREM).

Response:

The Ministry's representative on the CCREM's Toxic Substances Committee will bring this matter before the Committee.

Comment 5: (Environmental Interest Group)

Exclusion of a chemical from the EMPPL should be done only if low toxicity has been demonstrated. Lack of information is <u>not</u> a valid basis for exclusion from the EMPPL.

Response:

The chemical assessment process does not assign high priority to substances for which there is an insufficient data base. Therefore, such chemicals are not placed on the EMPPL because monitoring for these chemicals is not justifiable. However, chemicals which have been excluded on the basis of limited data have been noted and will be a priority for future information gathering activities. In addition, future research initiatives for these chemicals may be submitted to the Research Advisory Committee for consideration. It is envisaged that the results obtained from open characterization will further enhance the data base to permit assessment of more chemicals.

Comment 6: (Environmental Interest Group)

Since it is clear that the Task Force recognizes the initial EMPPL requires substantial refinement and expansion, their recommendations "should be heeded without delay."

Response:

In response to recommendations of the MISA Priority Pollutants Task Force, the Ministry has formed the PSAC with federal-provincial representation. The mandate of the PSAC includes the further development of the chemical assessment process used to develop the EMPPL.

Comment 7: (Environmental Interest Group)

The Task Force admitted that the hazard assessment performed on many chemicals suffered from several problems. These problems included uncertainties surrounding the appropriateness or applicability (to the Ontario situation) of data developed in other jurisdictions, under different or unknown circumstances, or arising from limited or outdated assessments. Our confidence in the manner in which chemicals were omitted from this 1987 EMPPL is undermined by these facts.

Response:

The chemical assessment process evaluates chemicals based on their physical-chemical and toxicological properties which are universal. The assessment schemes adopted from other initiatives (namely the work of the State of Michigan and the Niagara River Toxic Committee (NRTC)) are comparable to the Ministry assessment process and as such are satisfactory for the 1987 EMPPL. The Ministry will be examining chemicals assessed by these agencies according to its own criteria as part of its on-going process.

Comment 8: (Environmental Interest Group)

The criteria for promotion of a contaminant onto the EMPPL should be amended to provide a greater degree of environmental protection.

A major deficiency arises with the method of promotion from the primary group or Group B lists, based on exposure. In effect, no matter how good the Critical Materials Register, the NRTC list or the Ministry promotion process is, parameters will be excluded from the priority pollutants list based on potentially inadequate data on their presence in Ontario effluents.

Promotion should be based on possible presence, that is, Category D in the exposure section, plus other toxicological and effects-oriented criteria which also need improvement.

Response:

The Ministry believes that its exposure assessment process, which includes the potential presence of a chemical, provides for adequate environmental protection. One of the initial tasks of the PSAC is to review and refine the chemical assessment criteria with a view to maximizing protection of the environment. The Ministry cannot justify the placement of a chemical on the 1987 EMPPL if there is no evidence of its use/release in Ontario. The subsequent open characterization under the monitoring program will identify other chemicals which may be released to Ontario waters. This information will be used to update the EMPPL.

Comment 9: (Environmental Interest Groups, Private Citizen)

The entire list of 1500 candidate chemicals should be published together with the rationale of why specific chemicals were not included on the EMPPL. There should be clearly articulated criteria that will help the public and others understand the rationale for excluding each chemical. This information is presently absent from the EMPPL document.

The Ministry should hold a workshop for interested parties where the list can be discussed.

Response:

Substances were excluded from the candidate chemicals list based solely on toxicity and exposure evaluation as described in Section 3.0 of the draft EMPPL document. This chemical candidate listing is currently being reformatted prior to release.

Additionally, the Ministry is considering the possibility of holding a workshop to discuss the development of the EMPPL.

Comment 10: (Environmental Interest Groups)

The EMPPL is the central item upon which the entire MISA plan rests. If that list is incomplete, there will not be testing by industry for all of the hazardous chemicals. The Ministry admits that a limited data base and uncertainties in assessment result in major unknowns about the chemicals used in Ontario. We are alarmed about the basis for some exclusions from this list e.g., chemicals of high concern to the Priority Pollutants Task Force have been excluded.

Response:

Certain chemicals which were of particular concern due to their high toxicity were excluded from the EMPPL due to the lack of evidence of release into Ontario waters. If, as a result of open characterization or other programs, these chemicals are detected in effluents, they will be assessed for inclusion on the EMPPL.

Comment 11: (Environmental Interest Group)

There is no rationale for more stringent promotion of the secondary group (Group B) than of the primary group especially for some chemicals which are potentially in the effluents.

Response:

The criteria for promoting a secondary group chemical to the EMPPL is more stringent than for a primary group chemical because there are insufficient data available for the presence of these substances in effluent. This information will be enhanced through open characterization and review of the manufacture/use patterns.

Comment 12: (Environmental Interest Group)

The delisting which has occurred to even form the primary group, which is based on the identification of chemicals in Ontario effluents, is illogical, especially if considered to be an integral part of developing the MISA regulations (which is not being advocated).

Response:

The stated goal of MISA is the "virtual elimination of toxic and persistent contaminants" from Ontario waters. Therefore, toxicity factors are considered in the assessment of chemicals. Chemicals with low toxicity were not promoted to the EMPPL, even though they were detected in Ontario waters. The Ministry did not minimize the toxic potential of a given chemical. The worst case data were used in all assessments.

Comment 13: (Private Citizen)

Although "Standard reference materials" by definition are based on U.S. National Bureau of Standards or USEPA or "equivalent agency", the Ministry must have a definite priority to create Ontario parameter lists. These should include methylated polynuclear aromatics, methylated phenols and methylated benzenes or others which were not included in U.S. studies as was noted under Environmental Contaminants in Petroleum Refinery Wastewaters (6.1.1). The development of these Ontario lists should begin immediately and become an ongoing project for the Ministry.

Response:

The assessment of contaminants is a global challenge and it is prudent for organizations to adopt or adapt physical, chemical and toxicity information from other jurisdictions.

The Ministry acknowledges that exposure potential varies from place to place and therefore is developing an Ontario specific exposure data base. When this exposure information has been obtained and integrated with the EMPPL, the modified EMPPL will be an Ontario specific priority pollutants list.

Comment 14: (Environmental Interest Group)

The development of the EMPPL first is completely contrary to and undermining of the MISA approach of developing an effluent monitoring regulation to assess the effluent, followed by an abatement regulation on a sector-by-sector basis. Monitoring should be the start of a sector-specific list-building process. The capability to 'scan' and evaluate the effluents should be used to define the objects of abatement.

Monitoring should be redefined as open characterization followed by quantification. This approach should be used to amend the draft regulation before it is promulgated and for subsequent effluent monitoring regulations.

The EMPPL should not be used as the basis for setting the effluent monitoring regulations requirements.

The task at hand is the development of a rigorous effluent monitoring regulation for specific industrial sectors with the aim of gathering an adequate data base for the development of an Ontario-specific priority pollutants list and is a desirable and worthwhile effort in its own right. Basing the regulation on the as-yet unfinished EMPPL is self-defeating against the goals and objectives of MISA. All efforts should be made to determine 'what is in there' and then to quantify what is known to be in the effluent.

Since the self-admittedly unfinished and imperfect EMPPL is being used to set the effluent monitoring regulations, deficiencies in the priority pollutants list will be reflected in the regulations.

Response:

The 1987 EMPPL is a viable starting point, based on information currently available. The Ministry acknowledges that data base modifications will be an ongoing process within the MISA program. Furthermore, the Ministry has confidence in the soundness of its assessment process. Detailed chemical evaluations will be produced for each chemical on the EMPPL. Subsequent releases of the EMPPL will be updated as these chemical evaluations are completed. The Ministry believes that this approach is preferable to deferring monitoring pending completion of all chemical evaluations.

Comment 15: (Environmental Interest Groups)

Some of the Groups were disturbed to read that the EMPPL was prepared in admitted haste and that conclusions were reached on an admittedly incomplete and deficient information base.

The fundamental importance of this document suggests that it must be prepared with the utmost accuracy and must undergo thorough scrutiny before it is implemented.

Response:

The completion of detailed chemical evaluations is very time and resource consuming. The 1987 EMPPL was created in advance of completed detailed chemical evaluations in the interest of having a guidance document available in the interim for developing effluent monitoring regulations. The Ministry acknowledges the existence of data gaps, however, this does not compromise the integrity of the evaluation process.

Comment 16: (Environmental Interest Group)

The EMPPL is a limited document based on a number of serious inadequacies. Although it appears appropriate that the Petroleum Regulation proceeds, no further regulations under the MISA program should be written until the EMPPL has undergone thorough review and amendment based on a more complete data base and a more accurate and appropriate hazard assessment.

Response:

The enhancement of the data base through open characterization and review of the assessment criteria by the PSAC are ongoing processes within the MISA program. Regulations will continue to be developed in conjunction with the EMPPL.

Comment 17: (Environmental Interest Group)

The EMPPL should definitely not be the driving force behind the MISA program or the MISA program will be as limited as the list itself.

Response:

The process used to develop the EMPPL identifies chemicals to be addressed by the Ministry for each sector. These chemicals, if discharged, could pose a hazard to the receiving environment. The list will be developed further as more information becomes available.

Comment 18: (Environmental Interest Group)

Some parameters have actually been listed in other reports of monitoring effluents in the petroleum refining sector, but are not proposed for quantification during the monitoring phase either because of analytical constraints or because not enough toxicological information has been gathered on them to promote them to the EMPPL. The former reason is arguably valid in the short-term for some parameters and is completely invalid for some, since others (government and private laboratories) have managed to obtain satisfactory analyses. The latter is in direct conflict with the goals and objectives of MISA and relates to the major flaw of this draft regulation.

The omissions include the phthalate group which are known to be carcinogenic, the ethers, the dinitrotoluenes which are also toxic, PCBs which are ubiquitous and environmentally damaging, the methylated PAHs which are in refinery effluents, and some additional metals (iron, strontium, titanium, zirconium, barium, boron). These parameters should be quantified.

Response:

In the development of the EMPPL, the candidate chemical listing was compiled from as wide a variety of source material as possible. Input was provided from chemical lists used by recognized agencies or organizations that have regulatory and assessment responsibilities and from chemicals identified by the Ministry through its various monitoring programs. The Ministry acknowledges that the data base is limited and may not allow for the identification of all chemicals of potential concern that are in Ontario effluents and is developing this process by including information from open characterization and other Ministry environmental monitoring programs and manufacture/use patterns data. The goal of the MISA program is the virtual elimination of persistent and toxic chemicals. The EMPPL identifies those chemicals that meet these criteria. Insufficient toxicological information does not make the chemical toxic.

Specific isomers from the phthalate, dinitrotoluene and PCB groups were included on the EMPPL. Additional chemicals and chemical groups will be assessed in the ongoing assessment process.

Comment 19: (Environmental Interest Groups)

The time and resources of the Ministry need to be swiftly committed to develop validated test protocols for the 56 chemicals removed from the 1987 EMPPL of 180 chemicals. Since some of the chemicals in the group of 56 validated test protocols occur in refining effluents, and since some are on the characterization list and/or scheduled for regular monitoring, this should be given top priority.

Response:

There are currently only 46 chemicals or chemical groups of the 179 on the 1987 EMPPL which do not have validated analytical test protocols. Only those chemicals which have validated protocols may be required for routine monitoring or characterization. The Ministry is aware that additional resources are required to support the ongoing development of the EMPPL, including the development of validated analytical protocols. The Ministry's Laboratory Services Branch is developing methods for the remaining contaminants. As these methods become available, the characterization lists for each sector will be updated. The PSAC has been set up to expedite the process of updating the priority pollutants list. The MISA Office, through the funding of special studies, may also assist in the screening of compounds known to be in effluents but presently not included on the EMPPL.

Comment 20: (Environmental Interest Groups)

The MISA Priority Pollutants Task Force cites five categories of pollutants (each with unspecified number of chemicals) not placed on the EMPPL chiefly as a result of a limited data base.

Response:

The PSAC will be addressing these chemical categories on a priority basis in the near future.

Comment 21: (Environmental Interest Group)

New chemical evaluations should be completed in time to form the basis of the next effluent monitoring regulation. This is especially important since the next effluent monitoring regulation in line is the Organic Chemical Manufacturing Sector, in which will probably be found the widest variety and largest number of different chemicals. A truly complete Priority Pollutants list is necessary to adequately characterize these effluents in preparation for control limits for this sector.

Response:

Additional compounds, not currently on the 1987 EMPPL, have been identified through pre-regulation effluent monitoring in several sectors including the Organic Chemicals

Manufacturing Sector. These compounds will be screened for inclusion on the next update of the EMPPL.

Comment 22: (Environmental Interest Groups)

The environmental interest groups agree with MAC's recommendation that persistent organic compounds, such as PAHs, mercaptans, thiophenes, ketones and alkylated phenolics be assessed in the EMPPL process within one year.

Response:

MAC's recommendation will be addressed by the PSAC as a priority consideration.

Comment 23: (Environmental Interest Groups)

Why was the EMPPL released in conjunction with the draft regulation? It should have been released separately for public comment and review.

Response:

The EMPPL document was released in conjunction with the draft regulation since it is a supporting document to all regulations promulgated under the MISA program.

Comment 24: (Environmental Interest Group)

The need for refinement of the draft EMPPL seems clear when we make comparisons between the EMPPL and the list of characterization parameters required in the draft regulation. Several incongruities are evident.

There are five chemicals (Butyl benzyl phthalate, Bis(2-ethylhexyl) phthalate, Di-n-butyl phthalate, Diphenylamine, and N-nitrosodi-n-propylamine), all phthalates, for which the EMPPL categorized MOE analytical methodologies as "P" (probably can be analyzed by available proven methods but confirmatory tests not yet conducted). However, these chemicals appear on the characterization list. The question arises, do validated test protocols exist or not? Another chemical, bis (2-chloroethoxy) methane, is on the EMPPL but is categorized on the EMPPL as "?" but is scheduled for monthly monitoring. A further two chemicals (m-Xylene and p-Xylene) are categorized on the EMPPL as "N" (no "routine" monitoring capability) but require characterization, daily, monthly and quarterly monitoring. Finally, two chemicals (trichloroguaiacol and trimethylnaphthalene) are categorized on the EMPPL as "Y" (validated test protocols exist) but are not on the characterization list. Admittedly, these final two chemicals do not typically occur in refinery effluents. However, the incongruities noted above regarding the six phthalates, two phenolics, two non-halogenated volatiles, and one halogenated volatile raise questions about the listing of chemicals on the EMPPL and the characterization list and the accuracy of the material released in draft form.

Problems with phthalates showing up in tests as artifacts of sampling can be overcome by alternate sampling and laboratory procedures to provide a true picture of phthalate effluent loadings.

Response:

The EMPPL document released was a draft and therefore contained some information which was later revised. The laboratory capability to analyze samples for various chemicals has been updated to reflect current capabilities. Validated analytical protocols do exist for the phthalates listed as well as for m-xylene and p-xylene. Analytical protocols are available for trichloroguaiacol but the Laboratory Services Branch has not yet confirmed the method. Trichloroguaiacol should have been categorized as "P". Trimethylnaphthalenes are a group of chemicals and the individual species of concern must be determined before analytical capability can be assessed. Any chemical coded with a '?' was not reviewed for laboratory capability prior to printing the draft report.

The sampling and analytical principles and protocols specified in the General Regulation have been designed in part to reduce if not eliminate contamination of samples with phthalates due to contact with sampling and analytical equipment.

Comment 25: (Industrial Association)

We have some concerns regarding the quality of some of the sources of information employed in developing the EMPPL and the criteria used to add materials to the list.

Response:

The concerns about the quality of information sources and criteria for adding materials to the list are not specified. The concerns outlined in other communications concerning the EMPPL by this industrial association does not invalidate the general approach taken by the MISA Priority Pollutants Task Force in preparing the EMPPL.

Comment 26: (Industrial Association)

The document, in Table 5, provides not only a draft priority pollutants list, but also associates those materials with specific industrial/municipal sectors. This will be given the erroneous interpretation by many that these materials are discharged in hazardous quantities by those sectors. Given the (a) "limited data on the chemicals present in Ontario effluents" as stated by the MISA Priority Pollutants Task Force, and (b) pre-regulation effluent monitoring programs currently underway which will confirm or modify the data bases, we question premature publication by the Ministry of industry/municipal specific data at this time. The industrial organization strongly urges that any publication of industry specific lists be deferred until the results of the pre-regulation monitoring effluent characterization programs are properly evaluated by the respective Joint Technical Committees.

Response:

The industry specific lists, shown in Table 5 of the draft EMPPL document, were drawn up based on the best available information at that time. The results of pre-regulation monitoring will be used to modify the industry specific lists. Chemicals may be both deleted or added to the list as a result of the monitoring.

Comment 27: (Industrial Association)

Although we have not carried out a detailed evaluation of the methodology used for promoting or discarding materials, it is clearly flawed or has been used inappropriately. It appears that compounds can be promoted to the EMPPL merely on suspicion of their potential presence in an effluent with no evaluation of actual evidence. The pulp and paper mill effluent monitoring list includes compounds, e.g., eugenol and oleic acid, apparently because of the mutagenicity/genotoxicity scores, despite the fact these compounds are included in the US FDA list of "Generally Recognized as Safe" substances (21 CFR Ch. 1 (4-1-85 Edition). Other compounds listed, e.g., hydrazine and thiourea, are apparently included because they are used by the industry (Ref. 44) although there is no evidence that they appear in effluents. Still further compounds, e.g., the chloroacetones are included because they have been detected in a process effluent (Ref. 46) although again, there is no evidence that they are present in final mill effluents.

In light of the above, the current "starting point" list that the Task Force has prepared should be designated as an "interim draft" list only.

For the proposed list to be able to provide a "sound basis" for regulation development, it is imperative that the data which are used to develop the list are "sound". We are not satisfied that such was the case, at least with respect to the pulp and paper sector effluent monitoring list.

Response:

Due to the limited information readily available on final effluent compositions from the Ontario pulp and paper industry, the MISA Priority Pollutants Task Force used information on process effluents and other intermediate streams to place a chemical on the list. The assumption made was that presence in an intermediate stream suggested potential presence in a final effluent. It would be irresponsible (because of the Ministry's mandate) not to promote a substance suspected of being present in pulp and paper mill effluents. It is only with the pre-regulation and regulation monitoring data that a more extensive picture of final effluent composition will become available and the list can be modified in light of that information.

Comment 28: (Industrial Association)

The Task Force states on p. 6 of the EMPPL document that "only those chemicals identified in Ontario pulp and paper mill effluents" were considered for the Pulp and Paper Effluent Monitoring List. On this basis, one questions the relevance of the U.S. reports.

Response:

The primary group consists of chemicals identified in Ontario pulp and paper mill effluents. Other sources, such as U.S. publications, were used for the secondary group. Further, some U.S. studies parallel the condition in Ontario. For example, wood species and mill designs in Wisconsin/Minnesota are similar to those in Ontario.

Comment 29: (Industrial Association)

Although the Task Force has stated (p. 2) that one of the principles that it would follow in the development of the EMPPL was to use information that was available in the public domain, four of sixteen references cited for the pulp and paper effluent monitoring list are designated as "unpublished reports".

Response:

It is claimed that the MISA Priority Pollutants Task Force did not follow the principle of using only information "available in the public domain". This is a mis-quotation. Principle number 3 (page 2 of the draft EMPPL document) states that scientific literature will be used "to the greatest extent possible" and all information used in preparing the document will become "part of the public domain". Therefore, the Ministry has provided the reports and analytical data to the concerned industrial association.

Comment 30: (Industrial Association)

One of the most unfortunate aspects of the EMPPL development, at least insofar as the pulp and paper effluent monitoring list is concerned, is the reliance on Ref.3 (Cherwinsky and Murray, 1986. Preliminary Investigation of Trace Contaminants in Pulp and Paper Mill Effluents). This report is cited 62 times in support of the 91 chemicals listed as being relevant to the pulp and paper industry. The reliance placed upon the Cherwinsky and Murray report is totally unwarranted.

Response:

These comments on the 1986 report by Cherwinsky and Murray are based in part on a report on pulp and paper mill effluents prepared for the pulp and paper industry organization by a consultant and have been addressed by the MISA Priority Pollutants Task Force previously. A full critique of this consultant's report was sent to the Joint Technical Committee for the pulp and paper industry in July 1987.

The term "preliminary", as applied to the Cherwinsky and Murray report, does not imply that the information in the report is of poor quality. The Laboratory Services Branch of the Ministry, together with the consultant who did the analyses for the 1983 samples, support the results. Due to the absence of published information on pulp and paper mill effluents in Ontario, the Cherwinsky and Murray report represents the first extensive investigation, the results of which are available to the public.

Comment 31: (Industrial Association)

Table 5 shows only a "possible" analytical capability for di-n-butylphthalate and bis(2-ethylhexyl)phthalate whilst in fact both compounds can be analyzed using USEPA method 625.

Response:

As explained in the draft EMPPL document (p. 21), "possible" analytical capability means that proven methods are available, but that the Laboratory Services Branch has not yet confirmed the method. The methods have now been confirmed for di-n-butylphthalate and bis(2-ethylhexyl)phthalate and these compounds are included on the petroleum refining sector effluent monitoring list.

Comment 32: (Industrial Association)

The pulp and paper effluent monitoring list, in Table 5, includes several generic, i.e. non-isomer specific compounds such as: chlorodehydroabietic acid, trichloroguaiacol, trichloroacetone and tetrachloroacetone. How does one analyze for or make hazard (scoring) assessment for such "compounds"?

Response:

Trichloroacetone and tetrachloroacetone are isomer specific in Tables 5 and 6 of the draft EMPPL document. The inclusion of appropriate hazard scoring assessments in Table 6 obviously indicates that non-isomer specific information on toxicity is available. It is very common in the scientific literature to find reports of analytical results for substances like phenols, dioxins, PCBs, etc. without identifying the isomers.

The consultant's report (see Comment 30) identifies non-isomer specific compounds, for example groups like tannins and lignins, in Appendix 6 of the document.

Comment 33: (Industrial Association)

Two references in the EMPPL document (44 and 55) are cited in support of the inclusion of PCDFs and PCDDs, neither of which are scientific documents. In fact one is a news release regarding dioxins in sludges and not effluents.

Response:

Since the draft EMPPL document was published, several scientific studies have been released which indicate the presence of both dioxins (PCDDs) and furans (PCDFs) in pulp and paper mill effluents. The presence of dioxins and furans in pulp wastes and mill effluents has been confirmed in studies by the USEPA and the American Paper Institute of chemical pulp mills in the United States and Canada. The presence of dioxins in effluents is also confirmed by the consultant's report (see Comment 30), which found 2,3,7,8-TCDD in all of the 23 analyses. The PCDDs are probably formed as trace contaminants during bleaching of kraft pulps with chlorine and chlorine derivatives.

Comment 34: (Industrial Association)

References 3, 27, and 56 are cited to support the presence of chlorodehydroabietic acid in pulp and paper mill effluents. Ref. 27 is a preprint abstract only concerned with the analysis of US effluents. Ref. 56 is a BCR review (CPAR Ref. 678-1) which does not specifically identify chlorodehydroabietic acid in Ontario effluents and Ref. 3 is the Cherwinsky and Murray report which contains no mention of this compound.

Response:

Indeed, reference 3 in the draft EMPPL document does not cite chloro-dehydroabietic acid as a constituent in effluents. However, this substance has been identified in the consultant's report (see Comment 30) as being present in about a quarter of the samples in which it was analyzed for.

Comment 35: (Industrial Association)

With respect to the compound hydroxycyclohexane on the EMPPL, the Task Force appears to have made an error in transferring the information from Ref. 3 which cites hydroxycyclohexanone but no hydroxycyclohexane.

Response:

The compound hydroxycyclohexane was mistakenly listed in place of the correct compound hydroxycyclohexanone. The latter compound has been assessed and has been delisted due to its low toxicity.

Comment 36: (Industrial Association)

Ref. 46 is cited to support the presence of chlorinated acetones in pulp and paper mill effluents. However, the compounds in question were identified in a process effluent, namely C-stage bleaching effluent. One cannot assume that these compounds will be still present in total mill effluents after mixing with/reacting with other process effluents from the pulp mill.

Response:

Unless removed by reactions with other effluent streams or by treating the effluent, chlorinated acetones may be found in pulp and paper mill effluents, but, because of dilution, very likely at low concentrations. In any case, the consultant's report (see Comment 30) indicates the presence of di- to hexa- chloroacetones in effluents.

Comment 37: (Industrial Association)

Table 16 of Ref. 8 in the Task Force Report lists methyl naphthalene and cresol as having been identified in a pulp mill effluent by means of GC/MS. Although Table 16 does not specify which isomers for the two compounds were found, the Task Force has taken the liberty to list all possible isomers for methylnaphthalene (i.e. 1- and 2-) and cresol (i.e. o- , m-, and p-) in Table 5 of its report. We were unable to obtain information about the

experimental details in Ref. 8 which would allow us to make an assessment of the quality of the data.

Response:

The cresol isomers are listed in reference 3 of the draft EMPPL document and the consultant's report (see Comment 30). Reference 8 is indeed the only identified source for the methyl naphthalenes. The monitoring now under way will be necessary to confirm their presence in effluents.

Comment 38: (Industrial Association)

Matters such as the types of effluents to be monitored, frequency of sampling, extent of analytical requirements, etc., must be tailored to each industrial sector based on their relative impact on the environment. The development of lists of effluent components for which analyses are required must be based not on whether these materials are toxic under some artificial laboratory conditions, but on sound scientific evaluation of whether they present an environmental risk. Criteria for listing must be accompanied by criteria for delisting.

Response:

The MISA Priority Pollutants Task Force has developed a sound scientific basis for listing chemicals for industry specific monitoring. The use of laboratory studies to predict the environmental effects of a chemical is an accepted scientific procedure. The criteria for delisting are under development and will consider both the effects of chemicals on the environment and their presence in effluents.

Comment 39: (Environmental Interest Group)

If chemicals are not listed, they will not be routinely monitored for. The following is a list of chemicals that we believe should be listed right away on the EMPPL: alkylated polyaromatic hydrocarbons (including methylated groups), mercaptans, thiophenes, ketones and alkylated phenolics.

Response:

The chemical assessment process will be further developed to identify and evaluate those chemicals not currently listed on the EMPPL. Chemicals identified in ambient water and as a result of open characterization, such as alkylated polyaromatic hydrocarbons (including methylated groups), mercaptans, thiophenes, ketones and alkylated phenolics will be considered for inclusion on later revisions of the EMPPL.

Comment 40: (Industrial Association)

The cover reads "Effluent Monitoring Priority Pollutants List (draft)" whilst the title page reads "Development of an Ontario Effluent Monitoring Priority Pollutants List - A Guidance Document". The meanings and consequently, the implications of these two titles, are quite different. The title on the inside page, we believe, properly describes the document, i.e; it

is a guidance document for the development of an Ontario effluent priority pollutants list. To avoid any misinterpretation of the document, we urge that the cover title be changed to that given on the title page.

Response:

The EMPPL document is termed a "guidance document" since it serves as a guide for preparing the effluent monitoring lists for the various sectors. The publication is entitled "Effluent Monitoring Priority Pollutants List (1987)".

2.3 DEFINITIONS

Comment 1: (Private Citizens)

Please note the following sections: Under Reporting 15(2), "Each effluent discharger shall report any changes..." and under Explanatory Notes - Characterization, 6th paragraph (p. 52), "A significant process change is defined as ... for a Certificate of Approval". Is this definition to be used under Section 15 Reporting of any changes? The ambiguity of the word "change" could mean that one industry will report all repairs while another will report only those requiring Certificates of Approval.

Response:

The ambiguity of the word "change" has been eliminated by the revision of the draft regulation. The definition of a process change is: "process change" means any change in equipment, production process or treatment process.

In section 5 of the Petroleum Regulation, clause (1)(d), "process change" is used in the following context: characterization must be carried out at each process effluent sampling point "once within thirty days after every process change that is expected to adversely affect the quality of that effluent".

Subsection 17(2) requires that the direct discharger report any changes to the initial report (background information) submitted under subsection (1).

Comment 2: (Industry)

Effluent from one of the refineries is pumped from the final holding ponds to the river. Thus the refinery and the effluent treatment plant can be in operation with no discharge going to the river. For the purpose of the regulation, we would interpret "operating day" to mean each day when the final effluent pumps are in operation and there is a discharge to the river.

Response:

The draft regulation was revised and "operating day" is described in section 1 of the General Regulation as follows: "operating day" means the length of time in a twenty -four hour period during which a plant is discharging effluent.

2.4 ANALYTICAL METHODS

Comment 1: (Industrial Association)

We recommend that the regulation be amended to allow for future acceptance of alternative, equivalent or better methodologies subject to prior validation to the satisfaction of the Ministry (Section 14(3)).

Response:

The Ministry will restrict the numbers and types of analytical methods applicable under the effluent monitoring regulations through specifications of principles and protocols to be followed. Industry and their laboratories are free to apply the best techniques which adhere to these tenets. Although the Ministry is interested and supportive of better, more cost effective methods, the Ministry has no mechanism nor feels it is necessary to include this in the effluent monitoring regulations. At the completion of the monitoring period, the Ministry will consider optional, equivalent or better methods where appropriate. Industry is invited to demonstrate these equivalences during the monitoring period as an additional research activity.

Comment 2: (Professional Consulting Companies)

The quality of laboratory data to be generated is critical. The approach to analytical methodology has been to specify generic requirements and general protocols for each test group, but not to specify exact methodology. Further clarification of Schedule 3 is therefore desirable.

Regarding specific test procedures, we request clarification on the following two points:

(i) Total Organic Carbon: It was acknowledged at the MISA information seminar that the only way of obtaining a true TOC analysis in wastewater containing high suspended solids is to filter the sample and analyze separately the organic carbon associated with the dissolved and particulate phases. Schedules 3A and 3B should be revised to include this approach as a valid method for determination of TOC.

(ii) Acid Extractables: The protocol specified for acid extractables includes derivatization in the sample operation. Will data generated on underivatized samples using capillary column GC/MS be acceptable? Which of the available derivatization methods (diazomethane, boron trifluoride-methanol, perfluorobenzyl bromide, in-situ acetylation) does the Ministry prefer?

Response:

(i) TOC method principles and protocols have been revised.

(ii) Derivatization is the method of choice of the Ministry. Analysis of underivatized extracts is an alternative and Schedule 3 in the General Regulation has been modified to include this approach. Derivatization can be accomplished in any manner the

industry/laboratory prefers - all are acceptable. The Ministry currently uses in-situ acetylation.

Comment 3: (Research Company)

With respect to Schedule 2, for metals in the analytical test groups 9, 10, 11 and 12, we believe it is essential that all sample containers be soaked in nitric acid. Our practice is to soak for 5 days in 7% HNO_3, rinse in deionized water and store the bottles filled with deionized water until used.

Response:

Sample container pre-treatment requirements in Schedule 2 of the General Regulation are based on Ministry experience with a given supplier of material and single use. If a five day pre-treatment has been found necessary and works in this case, it should be used by this laboratory.

The General Regulation states in subsection 3(14) that "All sample containers and wettable surfaces of the sampling equipment shall be clean so as not to contaminate the sample with any of the parameters in the analytical test groups for which the analysis is to be performed."

Comment 4: (Research Company)

With respect to analytical test group 26, resin and fatty acids, we recommend preserving samples by addition of NaOH to a pH greater than 10. Some resin acids isomerize in acidic solutions. Also, resin and fatty acids can absorb strongly to non-soluble solids such as biomass, fibers, sediments, etc. These tendencies are lessened in alkaline solution.

Response:

The Ministry is currently involved in the development and interlaboratory validation of a method for resin and fatty acids with the Ontario Forest Industry Association (OFIA). The method will be incorporated in the General Regulation after validating the protocol.

Comment 5: (Research Company)

With respect to Schedule 3B for analytical test group 26, resin acids and fatty acids, we have found polymeric absorbent resins (XAD-series) to be satisfactory for concentrating and recovering resin and fatty acids at pH 10. We suggest this method, which has been widely used for over 10 years, be included as an alternative to liquid/liquid extraction.

Response:

The regulation does not currently include XAD resins as they are not considered a mainstream or routinely available technique. The acceptability of the approach is not in question but a vast majority of laboratories still do liquid/liquid extraction and this routine technique provides the necessary sensitivity, accuracy and precision.

Comment 6: (Research Company)

We recommend Direct Current Plasma Emission Spectrophotometry (DCP) for metals analysis, as an alternate instrumental measurement method. It has been our experience that DCP provides a reliable, accurate, cost effective and precise method of analysis for effluent samples. The detection limits outlined in Schedule 3A can be achieved using our DCP system, which has a three point background correction capability.

Response:

The Ministry agrees with the recommendation and the use of DCP has been incorporated in Schedule 3, Part A of the General Regulation.

2.5 ANALYTICAL METHOD DETECTION LIMITS

Comment 1: (Industrial Association)

Our understanding was that before the method detection limits (MDLs) in the final regulation are revised for specific persistent chemicals, carefully designed round robin tests, literature reviews and analysis of the effluent monitoring regulation test data along with the associated QA/QC results would be carried out to determine practical MDLs.

Response:

To date, the Ministry has established a protocol for development of analytical method detection limits (MDLs). Parameter specific MDLs for groups 16 - 20 inclusive will be amended in Schedule 3, Part B of the General Regulation by November 1, 1988. These MDLs will be determined from industry and Ministry generated data using the MDL calculation procedure outlined in the Ministry's publication entitled " Analytical Method Detection Limit Procedure" (April 1988). The MDLs will be as close to 1 ug/L as possible. The MDLs for the remaining analytical test groups are parameter specific. They were derived following the MDL calculation procedure and have been reviewed by both industry and the public.

Comment 2: (Environmental Interest Groups)

It is our view that the monitoring phase of the MISA program amounts to a research program as the regulation is aimed at the identification of chemicals in effluents for the development of a comprehensive data base. Consequently, we are of the opinion that more sensitive "research quality" detection limits are justified, and not just the conventional limits thought to be available commercially. The capability of Ministry laboratories to achieve lower detection limits, together with the research mandate of the effluent monitoring regulation, suggest to us that the regulation should be aiming to achieve detection limits better than those presently outlined in the regulation. The detection limits should be set at 1 ppb, or lower like many other research projects detection limits and drinking water detection limits.

Response:

All sampling, analyses and sensitivity requirements under the MISA program are based on practical and routinely available approaches. These requirements cannot be undertaken in the same depth as a laboratory analytical research program. Lower limits could be defined and achieved but only at a higher cost (longer time for analyses and therefore lower frequency of analysis). Where the BAT(EA) limits are established at levels requiring monitoring of chemicals at levels lower than the current MDLs, then the MDLs will have to be revised.

Comment 3: (Government Agency)

We had found only three private laboratories presently equipped to satisfy the rather minute detection limits for priority contaminants. To provide our own facilities has been estimated at over a million dollars, plus a major

increase in staffing and operating cost over our present practice of periodic testing.

Response:

The analytical method detection limits quoted are achievable by modern analytical facilities. A review of 34 laboratories throughout Canada indicated that all were capable of achieving these performance standards. Analytical costs are considered part of operating expenses for industries and municipalities.

Comment 4: (Professional Consulting Companies)

Regarding Schedule 3A, page 36, in particular Columns 4 and 5: there is no reference to the method principles of the electrochemical techniques of polarography/voltametry, (VA-methods) despite the fact that the latest instrumentation has the ability to determine with remarkable facility those substances listed in Schedule 3A. The equipment for polarography/voltametry, even at its most sophisticated, is available at a fraction of the cost of AA (Atomic Absorption) and ICP (Inductively-Coupled-Plasma) instruments.

The Ministry seems to rely quite heavily on the opinions and recommendations of the USEPA which seems to be in favour of AA and ICP. Since little information has been gathered on practical usage of VA in the field against AA and ICP, no one is in a position to recommend VA as viable alternatives. We are submitting here the information concerning the VA methodologies which will hopefully permit these techniques to be listed by MISA, at the very least as "Alternate Instrumental Measurement Method Principles" wherever they are applicable in Schedule 3A.

Response:

The use of polarographic or VA methodologies has been incorporated in Schedule 3 of the General Regulation as an alternate instrumental measurement method principle via the method of standard additions to be used in the analysis of routine monitoring samples only (not characterization).

Comment 5: (Private Citizen)

Other jurisdiction rules, such as USEPA's method detection limit (MDL), need to be cited in their full form to avoid any confusion on interpretation, to the prospective owner of the refinery. All jurisdictions not codified in Ontario should be reproduced in full.

Response:

The Ministry has not referred to any other jurisdiction's rules in the draft regulation. This question was referring to the analytical method detection limit definition and the Ministry has developed a protocol since the release of the draft regulation. It is this protocol which is referred to in the MDL definition in the General Regulation.

2.6 CHARACTERIZATION

The MISA Effluent Monitoring program uses three approaches to characterization:

- closed characterization (characterization for a sector specific list);
- full characterization (characterization for the entire EMPPL)
- open characterization (full characterization and a full scan identification of organic compounds and inorganic chemicals).

The General Regulation defines "characterization" to be the analysis for all substances identified in Schedule 1 which includes the entire EMPPL for which analytical methods currently exist as well as traditional pollutants.

Comment 1: (Industry)

We agree with the requirement for initial characterizations, with subsequent characterization every third year, for a broad list of parameters of environmental concern. However, this list should be restricted to those substances which are likely to be present in the effluent by virtue of being raw materials, intermediates, products, or generated by the operation. In order to confirm their absence, we reluctantly agree to initial characterization for those substances listed in Column 2 of Schedule 1, which are not found in our operation (mercury, alkyl lead, dioxins, or dibenzofurans, and halogenated volatiles). If, as we expect, initial monitoring reconfirms that these substances are not present in our effluent, we object to any requirement to include them in subsequent characterizations. We therefore recommend that the regulation include a provision to modify the list of substances in Column 2 of Schedule 1, after the first year results are obtained, to include only those substances likely to be present in each individual dischargers effluent by virtue of being raw materials, intermediates, products, or generated by the operation.

Response:

Both open and closed characterizations have identified contaminants which were not expected from knowledge of a particular process. Characterization is meant to provide the Ministry with a long term data base on presence or absence of priority pollutants. Therefore, the Ministry does not feel that it is onerous to require such analysis once every three years.

Comment 2: (Environmental Interest Group)

There is no justification for exempting industries from performing the "open characterization" of their effluents. The difference between closed characterization for a list of 113 contaminants and open characterization must not be overstated. Since analysis will be done on a group-by-group basis, closed characterization will not be reporting all the gathered data.

In addition to the Ministry conducting open-end characterization, industry should be performing open characterization of their effluents on a bi-annual basis.

Response:

Information obtained from closed characterization can be used to determine the frequency of occurrence of contaminants of concern for that sector. The concentrations at which these are detected and the frequency of their occurrence may trigger more frequent monitoring.

The Ministry will conduct open characterizations as part of its audit program particularly where the nature of the effluents is largely unknown. Additional open characterizations may be required where the discharges are known to contain large numbers of chemicals, few of which are currently on the EMPPL.

The total number of characterizations (closed, open or full) which may be required under the effluent monitoring regulations will vary from sector to sector. The requirements will be based on the availability and quality of pre-regulation and historical data. For the petroleum refining sector, it has been found adequate for the industry to perform closed characterization. In addition, the Ministry will perform open characterization.

Comment 3: (Environmental Interest Group)

Major emphasis should be on finding contaminants of potential concern and promoting them to the routine monitoring schedule so that they may be quantified. It is completely contrary to the objectives of the regulation to have industry only monitoring for what we know to be in the effluent and the Ministry doing a minimum (all) "search and find".

Characterization (Section 4) should include a separate clause allowing addition of parameters to the routine monitoring/quantification list following discovery in the effluent. It should be clear that the monitoring schedules are not fixed, but will be adapted, to shrink or grow, based on the results of monitoring.

Response:

The Ministry and industry (where appropriate for that sector) will conduct open characterization and will be able to promote contaminants of concern, if found, to an effluent monitoring list through the listing/delisting mechanism for the EMPPL. The monitoring schedules are not fixed and the effluent monitoring regulations can be amended when additional information is available and the need for an amendment is identified. However, it is unlikely that the schedules will change during the 12 month effluent monitoring regulation.

Comment 4: (Environmental Interest Group)

Construction of the effluent monitoring regulation should be a two-stage process whereby: 1) contaminants known to be in the effluents are included automatically on a scheduled effluent monitoring list for quantification; and 2) open characterization would provide the data on contaminants which should then be formally added to the list of substances to be monitored on a regular basis. The latter can and should feed into the development of the priority pollutants list once appropriate promotion criteria, toxicological information and other impact information is defined.

Response:

The MISA program is following such a process. The sector effluent monitoring lists consist of traditional pollutants and a subset of the EMPPL. Refer to the response to Comment 3 with respect to open characterization.

Comment 5: (Private Citizen)

Even under normal operating conditions the proposed quarterly cluster monitoring program appears to be rather inadequate to characterize a complete spectrum of toxic and persistent pollutants and to assess their mass loads. I suggest that the frequency of the cluster (3 daily samples/week) monitoring be raised from four to eight per year.

Response:

Cluster monitoring on three separate operating days in one week in each quarter is sufficient since it provides more than one result in a short time-span for each parameter in each season. The logistics of sampling, transportation and laboratory analysis are simplified, potentially reducing the cost where contract laboratories are used. The Ministry does not want to impose unnecessary costs on industry if it is possible to obtain satisfactory data for cluster monitoring by monitoring four times per year.

Comment 6: (Industrial Association)

MISA Advisory Committee recommended that the method detection limits in open characterization (carried out by the Ministry) should be lowered to compound specific levels, and that the data should be reported for each compound to the 1 to 20 ppb range.

We believe that the above recommendation is based on a misunderstanding of the capability of open characterizations to measure substances accurately at levels below 50 ppb. We believe that the Ministry's response to MAC fails to portray the accuracy that can be expected, implying that results approaching 1 ppb may be possible. The precision quoted is, in our view, unattainable with current state-of-art technology when analyzing effluent or water samples from nature. This should be revised to more accurately represent the current technical capability for "open-ended" characterizations.

Response:

Refer to Appendix 3.2.

2.7 LISTING/DELISTING

Comment 1: (Industry)

As a fundamental principle of MISA, each discharger should be required to monitor only for those contaminants of concern which are, in fact, present in his refinery effluent. Thus it is essential that a process for listing/delisting parameters to be monitored at each frequency for each effluent be in place after the first year of monitoring. Such a mechanism must be site specific and allow for listing/delisting on each effluent stream. The regulation as presently structured does not lend itself to a site specific listing/delisting process. We recommend that the Limits Regulation be structured in such a way as to allow listing/delisting on a site-specific, effluent by effluent basis.

Response:

No decision has been made at this time with respect to the mechanism for listing/delisting. The Ministry may consider a site-specific process. A listing/delisting process will be developed after the promulgation of the effluent monitoring regulation and will be available for the effluent limits regulation.

Comment 2: (Environmental Interest Groups, Industrial Association)

The listing/delisting process is important to the entire process and we recommend that a mechanism be initiated within six months to one year.

Response:

The Ministry has formed the PSAC which is developing the listing/delisting mechanism for the EMPPL. There will also be a listing/delisting mechanism developed for the sector effluent monitoring lists. Refer to the response to Comment 1.

Comment 3: (Environmental Interest Groups)

We agree with the MAC recommendation to the MISA Priority Pollutants Task Group. A permanent listing/delisting committee should be set up to update the list. Non-government and non-industry people should sit on this committee. Public input should be solicited on proposals for listing or delisting. The public should be able to initiate the listing or delisting of chemicals.

Response:

Refer to the response for Comment 2. Public participation will be assured through MAC. In addition, documents will be available to the public.

Comment 4: (Private Citizen)

The listing/delisting mechanism should be subject to proof, sufficient in a court of law, of the necessity to include the 155 constituents promulgated in the first MISA regulation, and addition or deletion subject to that level of proof.

Response:

In all legal actions there is a degree of burden of proof that must be substantiated. The Ministry recognizes that all aspects of the MISA program must be subject to a burden of proof.

Comment 5: (Private Citizen)

Once a mechanism has been devised to delist a chemical which does not seem to appear in testing, what assurance will the public have that the chemical has not reappeared, e.g., from river sediments, at a future time?

Response:

The Ministry will develop a systematic procedure for follow up action on delisted chemicals to complement the Ministry's ambient monitoring programs. Depending on the reasons for delisting, it may be necessary to require occasional, infrequent effluent monitoring by the discharger to demonstrate the absence of a delisted chemical in the discharge.

The Ministry will, as part of the audit program, conduct open characterizations on effluent samples to detect presence or absence of contaminants not on the sector effluent monitoring list.

In addition, the Ministry's receiving water studies look at the environment as a whole and will provide a further check for any new contribution that could adversely affect the environment.

Comment 6: (Private Citizen)

Will the listing/delisting be an ongoing process or will a temporary (appendix) list be established for new chemicals? The companies which produce new chemicals that have not been evaluated or listed in the regulation could have 3 years to operate before the chemical is added to the list.

Response:

Under the requirements of the effluent monitoring regulations, direct dischargers must report any process changes which are expected to adversely affect the quality of the effluent. In addition, direct dischargers must characterize the effluent within 30 days of such change occurring.

Listing/delisting will be an ongoing process driven by many factors including data availability from the updated EMPPL.

Comment 7: (Private Citizen)

With tremendous volumes of water used in refining processes, minute quantities of any pollutant may not be found and could eventually be "delisted" when, in fact, it is entering the environment.

Response:

Samples are being collected from process effluents upstream of dilution with once-through cooling water to minimize the possibilities of not detecting toxic chemicals which are present. If trace amounts of chemicals bioaccumulate either in fish or biota or sediment, these compounds will be found and identified through receiving water studies.

Comment 8: (Environmental Interest Groups)

Absent from the monthly and the quarterly monitoring lists are analytical test groups 18, 19, 21, 22, 23, 24 and 27. Environmental interest groups have a number of concerns with some of these exclusions which were granted to the oil industry, apparently on the basis of previous oil industry studies (PACE studies). The explanatory notes accompanying the regulation do not clearly explain or justify this delisting. The removal of the above noted groups of chemicals from the monthly monitoring list appears to be a form of delisting. Any form of delisting is inappropriate until delisting criteria have been clearly articulated.

In group nineteen (base-neutral extractables) there are two dinitrotoluenes (2,4-Dinitrotoluene and 2,6-Dinitrotoluene) which are on the EMPPL and the United States Priority Pollutants List, and therefore should have been analyzed for in the PACE studies. However, there is no mention of these chemicals in the JTC report. We would like to know whether or not these chemicals were detected by the PACE studies. Unless there is substantial analytical evidence that DNT is <u>not</u> present in refinery effluents, it should be included on the monthly monitoring list. Phthalates are also excluded from the 113 chemicals that are to be monitored on a monthly basis in this regulation. We strongly object to the exclusion of phthalates from the monthly monitoring list. It is acknowledged that analyses of phthalates in the past have been subject to significant laboratory contamination, and were of questionable quality. However, this problem is not insurmountable. The Ministry and other laboratories must simply develop cleaner "phthalate-free" methods for doing these analyses. If no one begins doing this, no one will make progress in assessing the phthalates problem, and finding solutions. Similarly, Bis (2-chloroethoxy) methane and diphenylamine are not mentioned in the PACE study results and are not addressed at all in the JTC document. These chemicals should be monitored unless substantial evidence justifies leaving them off.

With respect to group twenty three (Neutral Chlorinated Extractables): the JTC document explains why hexachlorobenzene was excluded from monthly monitoring but there has been no explanation as to why the other chlorobenzenes in Group 23 were taken off the monthly list. Again, unless there is substantial high quality analytical evidence that these compounds are not present, they should be monitored.

Response:

Analytical test groups 18, 19, 23, 24 and 27 are listed on the characterization list in the Petroleum Regulation. Groups 18 and 19 (only polynuclear aromatic hydrocarbons (PAHs) and related compounds) are included on the quarterly monitoring list.

Chemicals from analytical test groups 19 (except PAHs), 23, 24, and 27 were not required under quarterly monitoring. These chemicals are not expected from refinery processes and with the exception of hexachlorobenzene (group 23) and phthalates (group 19) have not been reported in effluents. Hexachlorobenzene was reported at levels marginally above the detection limit; however, it was also present at the same levels in intake waters. Available data in the literature indicates that the detection of phthalates (group 19) at low levels in refinery effluent samples is most likely an artifact of the sampling and analytical methodology. Many analyses of refinery intake and effluent samples in the current data base have not shown any consistent difference which would dispute this conclusion (References: (1)PACE Report No. 85-6: "Evaluation of the Variability of Trace Organic Substances in Petroleum Refinery Effluents"; (2) Canviro, January 21, 1987: "Sampling and Analysis of Refinery Effluents to Assess Variations in Trace Contaminant Concentrations").

There are currently no parameters in analytical test groups 21 (extractables, phenoxy acid herbicides) and 22 (extractables, organochlorine pesticides).

Comment 9: (Environmental Interest Group)

After accounting for the lack of test protocols, the remaining chemicals on the characterization list are reduced further to a list of chemicals that will be regularly monitored in petroleum refining effluents. This final paring down of the list is justified by the fact that the excluded chemicals apparently do not typically appear in petroleum refining wastewaters. If this is actually the case, such exclusions would be acceptable. However, as stated above, we do not feel that the phthalates should be excluded. In addition, Group 18 on the characterization list, which includes acrolein, should also be included in the basis of new information indicating the presence of acrolein in petroleum refining effluents.

Response:

In the Petroleum Regulation, it is required that effluents be analyzed quarterly for analytical test group 18 which includes acrolein. Refer to the above response in regard to phthalates.

Comment 10: (Environmental Interest Groups)

Why not list all probable hazardous pollutants and then proceed to delist?

Forty-five pollutants on the EMPPL have been exempted from the monitoring requirements for the petroleum refining industry. A general statement is that these have been dropped because they have not shown up before in monitoring of petroleum refining discharges. Such statements are not adequate. We need more information on the extent to which these have been tested before. If we are to accept these exemptions from industry

testing, it is essential that the Ministry carry out open characterization of effluents.

The MISA Priority Pollutants Task Force recommends that open characterization of effluents be included in the Petroleum Regulation.

Response:

The 46 chemicals excluded from the sector effluent monitoring list do not have analytical protocols available at this time. The Ministry is working on developing these protocols and chemicals will be added as protocols become available; that is, the regulation would be amended to include them.

Resins and Fatty Acids have not been included in the monitoring requirements because they have not been found in refinery effluents. They appear to be present in the pulp and paper industry effluents and will be handled by the regulation for that sector.

Open characterization will be carried out by the Ministry in the audit program. Further details may be found in Section 2.6, Comment 3 and Section 2.2, Comment 19.

Comment 11: (Environmental Interest Group)

The persistent organic compounds, reported in the PACE studies, should be on the EMPPL and protocols for these be established as soon as possible. Lack of protocols should never be the reason to leave priority toxic compounds off the EMPPL.

Response:

Chemicals are not removed from the EMPPL due to lack of analytical principles and protocols. Chemicals on the EMPPL which are omitted from sector effluent monitoring lists are omitted at this time only due to lack of methods. It is a temporary measure until methods are developed.

2.8 SAMPLING

Comment 1: (Industrial Association)

Flow proportional sampling devices (p.10, Section 13(2) 1.(i)) may be appropriate for refineries which represent a relatively homogeneous sector which has operated for years under federal standards. It may be inappropriate to specify and require the installation of such sampling devices throughout all sectors before regulated effluent limits have been established because they may become redundant.

Response:

Flow proportional sampling devices will not be required in the first 12 months of monitoring (during the effluent monitoring regulation). They will only be required for variable flow process effluents after the 12 month period. This will allow direct dischargers the time to determine which streams have variable flow and to install appropriate equipment.

Comment 2: (Private Citizen)

In the event of a process breakdown for several days, daily composite samples (6 sub-samples per day, with the volume proportional to the flow rate) should be collected until normal conditions are restored. Each of the above samples should be separately tested for the parameters marked under Column 5 of Schedule 1 and for fish toxicity.

Response:

Samples are to be collected in the same way during both normal and upset operating conditions. For process streams, a minimum of 8 grab samples per day are to be collected. Any process breakdown leading to an emergency overflow will be sampled at the time of discharge for the parameters in Column 5 of Schedule A in the Petroleum Regulation (previously Schedule 1 in the draft regulation). The Ministry considers the frequency of toxicity testing as stated in the Petroleum Regulation to be adequate.

Comment 3: (Private Citizen)

For further clarification and to ensure that no fake negative values are reported, the following line should be added to page 14, Section 14, subsection (5)-3: "Diluted samples, showing negligible instrument response, will be sequentially retested at lower dilutions until the results can be verified."

Response:

The Ministry agrees in principle. The text in the General Regulation covers this by stating samples can be diluted or concentrated to be in the operating range of the calibration and by stating the analytical method detection limit that must be achieved.

Comment 4: (Industry)

Reliability for new sampling equipment may be poor and it may be difficult to achieve a reliability factor exceeding 90% in the first few months. It is recommended that for the effluent monitoring regulation, documentation of failure and proposed corrective action should be accepted as compliance for equipment malfunction or failure exceeding three days in any month. Until equipment is fully proven and experience gained, particularly in severe winter service, this reliability requirement should be flexible to ensure that the regulation is practical.

Response:

Some problems may be experienced with the sampling equipment at any time during the period of the effluent monitoring regulation. In the event of equipment malfunction, the onus would be on the discharger to demonstrate that all reasonable care was taken to prevent the malfunction and to repair the malfunction as soon as possible.

Comment 5: (Environmental Interest Group)

The explanatory notes indicate that potentially contaminated storm water will be sampled at the beginning of each discharge (Explanatory Notes, p. 51). We are concerned as to whether this sampling will measure both concentration, and total loading of process effluent which is discharged during major rainstorms. If samples are taken only at the beginning of such discharges, the sample may not measure the total loading. We would ask the Ministry to clarify this matter.

Response:

The purpose of storm water sampling is to provide an indication of the contaminants present in storm water discharges. This sampling will also provide an indication of the need for Best Management Practices (BMP) (concerning storm water segregation and treatment). It is considered most appropriate to sample at the beginning of each storm water discharge but this is not specified in the effluent monitoring regulations. This is the time when the concentrations of many of the contaminants would be the highest.

Process effluent discharged during a storm event will be monitored at the process effluent sampling points. This information will be sufficient to determine total loadings.

Comment 6: (Industry, Industrial Association)

The provision for storm water sampling (Section 9) appears impractical in that having staff available for sampling of every shower does not appear to be feasible given the unequal nature and frequency of rainstorms throughout the year. The frequency of sampling needs only to be sufficient to understand the contribution of contaminants by storm water. It would not be necessary to sample during every storm water incident to achieve this objective. Careful attention should be paid to what constitutes a "potentially contaminated water runoff".

Response:

The frequency of storm water sampling will be addressed on a sector specific basis. All of the plants in the petroleum refining sector have holding ponds for storm water and therefore have very few storm water discharges per year. The sampling refers to those discharges from these holding ponds. In other sectors such as the organic chemical manufacturing sector the proposed requirements for storm water sampling are 12 events per year (1 per month).

2.9 FLOW MEASUREMENT

Comment 1: (Industrial Association)

Section 12 (3), page 9, concentrated too heavily on the accuracy of flow measurement. In addition, the requirement for accuracy may not be practical - how is actual flowrate to be determined or defined? Perhaps the regulation should require the use of methods and devices which are inherently capable of an adequate accuracy at normal flowrate.

Response:

The Ministry supports the use of methods and devices which are inherently capable of an adequate accuracy at normal flow rates. However, since many dischargers have existing flow measurement devices, calibrations will be required to assure accuracy of reported data. On new installations, following proper hydraulic design guidelines, no primary device calibration will be required unless unusual hydraulic conditions prevail.

Comment 2: (Industry)

In keeping with the desire to estimate loadings of effluents, the required accuracy of flow measurement should depend on the order of magnitude of that load.

Response:

Since mass loading is the product of flow and concentration, the "order of magnitude" cannot be determined until after data are available. Low flow multiplied by high concentration has the same mass loading as high flow multiplied by low concentration. The significance of discharges cannot be determined in the absence of supporting data.

Comment 3: (Industry)

Accurate measurement of the once-through cooling water effluent flowrates, at this particular company's plant, is (according to the company) virtually impossible due to the design of the existing outfalls of the API gravity separators. This company has been working with the Ministry to determine the best practical approach to flow measurement. It has been agreed to estimate the flow of water into the refinery based on the cooling water pumped from the river. This will be determined using pump pressure curves. Once-through-cooling water is, however, returned to the river through four individual separators. It is the flow and proportion of flow leaving each that is impossible to measure accurately. It is likely that the accuracy of the best conservative estimate of the flow rates will be greater than 20%. The company recommends that the requirements for flow measurement accuracy of 20% be deleted from the regulation with respect to once-through cooling waters. This recommendation is further supported technically given the large analytical errors (greater than 100%) associated with measuring contaminant concentration near the detection limit.

Response:

If there are specific concerns to meet any requirements in the regulation, it is suggested that particular plants contact the Ministry directly and the situation will be evaluated on a case-by-case basis.

Loading of a chemical is obtained by multiplying concentration by flow. Concentration variability is method dependent and may be quite high. Therefore, it becomes important to minimize the variability in the flow measurement in order to achieve the overall objective of low variability in load estimate.

2.10 ROUTINE MONITORING

Comment 1: (Industry)

The sampling frequency appears to have no connection to activity at the facilities. Extensive periods of inactivity are common in some industries, particularly coal-fired electrical generating stations.

The rationale given for the sampling schedule (page 54) does not take into account the ability of large-scale, long-period detention systems (e.g., ash lagoons, intercept lagoons) to eliminate short-term fluctuations in effluent composition.

Response:

The Ministry acknowledges that there will be differences between the sectors and these differences will be dealt with in the sector specific regulations.

Comment 2: (Environmental Interest Groups)

The monitoring schedules, including monitoring of effluents, storm water, landfarm leachate, and cooling water, must be amended to truly reflect loadings of toxic substances to the waterways. Improvements should be made in both the scope and application of the effluent monitoring lists.

Storm water overflows and cooling water should be monitored for the contaminants on the quarterly/clustered list.

Response:

In order to assess the full environmental impact of an effluent, it is necessary to determine the total amount of contaminants, or loadings, discharged to the receiving water. Therefore, under the MISA program, monitoring data must provide information on both the concentration of contaminants and the flow rate of effluent streams in order to establish contaminant loadings.

The approach of the effluent monitoring program is to monitor process streams and, from the results of this program, develop an effluent limits regulation. Once-through cooling water, storm water, landfarm leachate, and emergency overflow sampling points are being monitored for chemicals in order to estimate loadings, to provide input to a hazard assessment, and for consideration for adding these chemicals to the EMPPL.

The parameters are primarily indicators, gross measures or actual measures of crude oil, wastes or petroleum refining products. In addition, chromium and zinc are required to be monitored if they are added to once-through cooling water. The monthly frequency will identify minor long-term leaks from processing areas into cooling waters. It is also required, in the reporting section of the regulations, that reports on addition of chemicals to cooling waters be provided.

Comment 3: (Environmental Interest Groups)

If there is a commitment to waste reduction as the primary mechanism of implementing the MISA program, a concerted effort should be made to find out what is coming out of the plant, not only what is going into the water via the final effluent pipes. As such, a monitoring program should be the first stage of a formal environmental audit whereby all waste streams are evaluated before treatment and mixing. The beginning stages of an environmental audit should be made a requirement of this effluent monitoring regulation.

Response:

The MISA program is designed specifically to protect waterways from effluents that may contain contaminants. The Ministry's MISA objectives, however, in no way imply that other efforts by industry to protect the environment should not be undertaken. The implications of environmental auditing go far beyond the MISA program. Although the Ministry supports and encourages environmental auditing, it is premature to require that environmental audits be conducted on a routine basis through legislation.

Comment 4: (Environmental Interest Group)

If a true picture is going to be achieved of loadings to waterways, untreated process water must be monitored for a full range of contaminants when it is discharged.

Response:

Our understanding is that this comment refers to emergency overflow. The Petroleum Regulation covers sampling during an emergency overflow in section 11 and states (1): "... each direct discharger shall collect a set of samples sufficient to perform all of the analyses required by subsection (3) from each emergency overflow sampling point on each affected emergency overflow effluent stream of that discharger." Subsection (3) states that "Each direct discharger shall analyze each set of samples collected under subsection (1) for the parameters in Column 2 of Schedule A which are marked with an "X" in Column 5 of Schedule A". However, the emphasis of the discharger should be on prevention of such discharges.

The data collected from the effluent monitoring regulations are only one source of information that the Ministry will use in setting effluent limits. Process knowledge, including raw materials used, best management practices etc. will also be used in forming the basis for effluent control on discharge to the water environment. The MISA program in its entirety, will in effect be an audit on the various sectors.

2.11 ACUTE TOXICITY TESTING

All of the participants who submitted comments on the subject of acute toxicity testing agreed in principle with MAC's recommendations to retain rainbow trout toxicity testing and to add the more sensitive Daphnia magna acute lethality toxicity testing. There were opposing opinions on the timing of the implementation of the Daphnia magna test. This resulted from the lack of validated test protocols at the time of submission of the public comments.

Comment 1: (Industrial Associations)

It is understood that the Daphnia magna acute lethality toxicity test would be incorporated into the regulation only after the protocols for using the test have been clearly validated and the methodology for consistently interpreting the results is developed and understood. There is a need for careful inter-laboratory testing and peer review prior to such tests being made a part of the regulation. It is also necessary to develop a technical support document to assist in uniform interpretation of all toxicity testing intended for the regulatory use.

Response:

The Daphnia magna acute lethality toxicity tests will be incorporated in the effluent monitoring regulation along with a fish toxicity test (rainbow trout). The protocol for the Daphnia magna test was widely distributed at the beginning of November 1987 and was reviewed by external experts. All review comments have been carefully evaluated, addressed and the protocol has been finalized. A proposed toxicity study utilizing Daphnia magna suggested by the Ministry as part of the pre-regulation monitoring program was not adopted.

Comment 2: (Environmental Interest Groups, Private Citizens)

The Ministry implies that there may be insufficient time to complete a test cycle for round-robin testing and peer review. Daphnia magna acute lethality toxicity test is a common test and is built into U.S. discharge permits now. We believe that this should be added to the regulation as soon as possible, and be incorporated in subsequent effluent monitoring and effluent limits regulations. Testing should continue regularly, regardless of data showing no acute toxicity.

Response:

Refer to the response from Comment 1.

2.12 CHRONIC TOXICITY TESTING

Comment 1: (Environmental Interest Groups, Private Citizens)

The MISA Advisory Committee (MAC) drew attention to the absence of chronic toxicity testing of the petroleum refining effluent streams. The Ministry has responded by stating its concern over the time and resources necessary to develop and validate cost-effective testing protocols. We submit that such testing should proceed immediately, and that the Ministry should secure the necessary financial and human resources to conduct chronic toxicity testing.

Response:

The Ministry is developing chronic toxicity testing but there are no immediate plans to incorporate such testing into the MISA regulations. Sub-acute, sub-lethal and bioaccumulation effects will be addressed through the application of site specific receiving water assessments and Provincial Water Quality Objectives.

Comment 2: (Private Citizen)

Ministry experts must include toxicologists trained as physicians that deal regularly with the subject of death, and/or disability created by chemicals.

Response:

There are toxicologists on staff in the Hazardous Contaminants Coordination Branch of this Ministry. In addition, the Ministry has access to physicians and toxicologists at the Ministry of Labour.

2.13 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Comment 1: (Environmental Interest Group)

We need assurances that contracting out to private laboratories will meet with quality assurance and quality control procedures. How many laboratories in Canada are capable of carrying out laboratory work under the MISA program? How many in North America?

It is acknowledged that the Ministry is faced with the dilemma when defining analytical requirements--definitions may be comprehensive but they do not guarantee good data. Eventually, the Ministry may have to recognize the inevitability of some type of laboratory accreditation system which would protect users of these services.

Response:

The need for consistent performance management is well recognized. The regulations will include many explicit formal requirements for QA/QC. The implicit requirements will be addressed through various Ministry documents on Laboratory Quality Management, Control Charting and methods development/documentation. The recent private laboratory review generally indicated the presence of sound QA/QC and good laboratory practice within the private sector.

Industry, government and private laboratories are responsible for the maintenance and constant improvement in this commodity (QA/QC). The laboratory review will provide a solid reference and evaluation of laboratory capacity and capability.

A comprehensive Ministry audit program for MISA is being developed to ensure compliance with the effluent monitoring regulations.

Comment 2: (Professional Consulting Companies)

Regarding the Quality Assurance/Quality Control aspects of the regulation, the regulation specifies the elements of a laboratory QA/QC program but it does not specify a standard of laboratory performance. A better defined set of laboratory performance standards is desirable. We recognize that the Ministry may lack the resources to carry out a laboratory accreditation program covering the full scope of this regulation. Would the Ministry therefore consider the use of an existing accreditation program (e.g. New York State) as an instrument for providing an objective set of laboratory performance standards?

Response:

Refer to Appendix 3.3 of this document.

Comment 3: (University)

In our opinion there are two problems in implementing MISA program: (i) skilled manpower to carry out testing, and (ii) faster methods for testing to

accomplish the job at a reasonable time. The universities should get involved in this area. We urge the Ministry to support the appropriate university scientists so that the job can be done better and more effectively.

Response:

The involvement of the academic sector in government programs has never been overlooked. Universities and Colleges are encouraged to offer their support where and when appropriate (R&D, monitoring, evaluation).

Comment 4: (Private Citizen)

Under (draft) Sampling Requirements 13 (16) page 12: "only qualified personnel are engaged in sampling ... equipment used." Who determines the qualifications of licensing of personnel and quality of maintenance of the equipment? How is uniformity to be maintained by companies which are in direct competition with each other? This concern applies to all testing not only during the first year.

Response:

The use of the term "qualified" was never intended as an indication of the need for an academic or professional license. To clarify this, subsection 3(22) of the General Regulation states that "Persons engaged in effluent sampling or in the maintenance of sampling equipment shall be competent in those operations." Experience and due diligence fill the requirements of competence and in this context it is industry's responsibility to assign competent personnel.

Uniformity in testing is partly assured by defined analytical protocols and partly by QA/QC requirements for both sampling and analysis.

Comment 5: (Private Citizen)

I suggest that prior to the implementation of this regulation, a mandatory training/refresher program be organized for concerned laboratory staff and supervisors of all the seven refineries.

I also suggest that the inter-laboratory calibration program be administered by an independent laboratory once every six months. This exercise would evaluate the performance of each refinery in determining the parameters marked under Column 6 of Schedule 1.

Response:

The Ministry is presently developing a program for training of Ministry staff and strongly supports the suggestion that industry undertake a training program for its staff. The Ministry will assist industry by providing training seminars for the MISA program.

Comment 6: (Industry)

We strongly support MAC's recommendation to determine inter-laboratory variability.

Response:

Refer to Appendix 3.3 of this document.

2.14 REPORTING

Comment 1: (Industry)

It should be recognized in 15(1), No. 2 that the quantities of chemicals added to once through cooling water is operationally dependent and cannot be predicted in a report to the Director. The requirements in 15(5) to report the dates on which particular batches of chemicals are added to once through cooling water is unjustified and only adds unnecessarily to the responsibilities of the discharger.

Similarly in No. 7, the schedule of sampling dates and times should recognize operating patterns and the constraint these present.

Response:

The Ministry does not require the reporting of predicted quantities of chemicals added to once-through cooling water, but the quantities used and types. This kind of information is important when the results of effluent analysis are interpreted.

Reporting of the once-through cooling water data has been redefined. The General Regulation requires that a list of the types and quantities of chemicals added to once-through cooling water in the previous calendar year be submitted to the Director in the initial report. In addition, the Petroleum Regulation requires that once in each quarter, each direct discharger submit to the Director a report which summarizes the quantities of, and the dates on which, chemicals were added to once-through cooling water. This is needed to help identify new chemicals which can be assessed for addition to the EMPPL.

Regarding the schedule of sampling dates and times, the Ministry needs this information in order to schedule successful cost-effective audits.

Comment 2: (Industry)

The one month reporting period in 15(2) is unnecessarily restrictive. The level of completeness and meticulous attention to detail cannot reasonably be met without cost. As the data is historical (not real time), the difference between receiving data 30 days after the event or 60 days after the event is insignificant.

Response:

In subsection 17(2) of the Petroleum Regulation, it is required to "report any changes to the information submitted under subsection (1) to the Director within 30 days after the end of the month during which the change occurs," which means from 30 to 59 days. This is a reasonable timeframe for the direct discharger to report and still allow enough time for proper data management by the Ministry.

Comment 3: (Industrial Association)

We are concerned that laboratories will not be able to meet the turnaround time specified in Section 15(3) of the regulation due to overload, mechanical or logistical problems. If a delay is beyond refinery's control, some exemption procedures should be in place.

Response:

The turnaround time for analysis has been set according to Ministry protocols, sound science and peer review. Wherever possible, these time frames have been maximized. A current review of private laboratories shows that they can meet regulation requirements. It remains the responsibility of industry to show due diligence in the reporting of data.

Comment 4: (Industrial Association)

We understand that it would be useful for the Ministry to know the planned schedule of sampling dates and times as well as the planned reporting schedule of contract laboratories; however, we believe it is inappropriate to demand such plans and their monthly revisions, many of which are not under the control of the discharger, in a regulation. We believe that sector plants would be willing to provide adequate information in response to blanket or specific requests. This can be accomplished as part of the normal requirements to keep the Ministry informed and thus avoid unnecessary paper burden which would be induced by regulated reporting.

Response :

Unless reporting is regulated, data handling problems can occur. The requirement to report sampling schedules has been amended in the final version of the Petroleum Regulation. It is no longer required to submit the schedule with the initial report. The schedule of sampling dates and times by location must be submitted 30 days prior to the collection of the first sample in each month. This schedule is required for all monthly, quarterly and characterization sampling in that month.

Comment 5: (Industrial Association)

Regarding MAC's recommendation on transfer of spills information, the consideration of spill reports by the MISA office would be reasonable, provided industry is not required to report spills to more than one point within the Ministry.

Response:

Spills reporting will continue to be coordinated through the Spills Action Centre (SAC) of this Ministry.

2.15 WATER QUALITY IMPACT

Comment 1: (Environmental Interest Group)

Water quality impact must be the basis upon which decisions are made in the MISA program, not the criterion of "best available technology economically achievable". The Explanatory Notes to the draft regulation contain an alarming statement that goes contrary to this principle. It states: "The data [gathered through the effluent monitoring regulation] will be evaluated and applied to the development and implementation of effluent limits, based on Best Available Technology Economically Achievable."

We urge the Ministry to ensure that the consideration of impacts of hazardous substances and the quality of receiving waters be fully integrated into MISA program in all its stages.

Response:

At this time, the Ministry is developing regulations which will set effluent limits based on BAT(EA) (Best Available Technology (Economically Available)) for each sector. As technology improves, BAT(EA) is going to be reviewed and the effluent limits regulations amended to impose lower effluent monitoring limits where required. More restrictive water quality based criteria may be imposed where the receiving water requires additional protection.

2.16 SELF-MONITORING/AUDITING

Comment 1: (Environmental Interest Groups)

Self-monitoring program by industry is not acceptable. Past records prove that industry cannot be relied upon to monitor itself. The Ministry must allocate sufficient resources to undertake extensive monitoring and auditing process of its own. Although the explanatory notes refer to government plans to audit and monitor, the regulation contains no assurances of how this auditing will be conducted. In addition to placing this auditing requirement into the regulation, we ask for a document describing in detail the kinds and frequency of auditing and monitoring that the Ministry will conduct. Without these guarantees, we cannot place much faith in the data that the effluent monitoring regulation generates.

Response:

A comprehensive Ministry audit program for MISA is being developed to ensure compliance with the regulations. The audit program will consist of unannounced site visits by the Ministry. Audits will include inspections to ensure appropriate protocols are in place, random sampling and analysis of effluent.

The audit program is a Ministry responsibility and as such can not be stipulated in the effluent monitoring regulations. The results of auditing will be available to the public.

Comment 2: (Private Citizens)

How often will plant design be checked and industry audited after the first year? Does the government audit at random or only when they suspect foul play?

Response:

Any design change which affects effluent quality requires that a Certificate of Approval under the Ontario Water Resources Act be issued by the Ministry prior to the implementation of the change. During the period of the effluent monitoring regulation, the Ministry will conduct several inspections/audits. The first audit will be conducted at the beginning of the monitoring period to ensure that all the sampling and flow measurement devices are installed, as well as to check the laboratories and ensure that all the protocols are in place. In addition, there will be a minimum number of random inspections for compliance regarding sampling and reporting. This does not preclude additional inspections if and when warranted. The audit program has not been defined yet for the effluent limits regulation.

Inspections/audits are an ongoing responsibility of the Ministry's regional abatement staff. The Investigations and Enforcement Branch is involved when foul play is suspected.

Comment 3: (Private Citizens)

Is the monitoring equipment tamper proof? Are the companies going to take and give readouts to the government?

Response:

Monitoring equipment (flow, sampling, analytical instrumentation) is the property of industry and their laboratories and as such is not tamper proof. It is true that industry will be reporting the results to the Ministry. However, as mentioned in the response to Comment 2, the Ministry will conduct random inspections to ensure the stability, accuracy and dependability of the individual activities.

2.17 REGULATION ENFORCEMENT

Comment 1: (Private Citizens)

Several private citizens suggested higher fines for second time offenders and closing of the company for the third time offenders be legislated.

It was suggested that a $50,000 daily fine be imposed against polluters. If not paid within days, the fines should be doubled.

Response:

Penalties for violations of the Environmental Protection Act and regulations under it were substantially increased in the 1986 amendments to the Act (Section 146). The amendment raised fines for first and subsequent offences related to actual pollution. Examples of penalties for contravening this Act or the regulations include fines for every person of not more than $5,000 on a first conviction and not more than $10,000 on each subsequent conviction and maximum fines for a corporation of $25,000 on a first conviction and $50,000 on each subsequent conviction.

2.18 BAT(EA)/ EFFLUENT LIMITS REGULATION

Comment 1: (Environmental Interest Group)

BAT(EA) (Best Available Technology Economically Achievable) control requirements are going to be imposed after BAT(EA) standards have been set and will not have an impact on forcing tough BAT(EA) cleanup standards.

There was no mention of zero discharge or "the virtual elimination of toxic discharges to Ontario waterways" in the draft regulation. We feel that this is a very important part to be left out of the draft regulation.

Response:

BAT(EA) is not restricted only to end-of pipe treatment, but also includes a variety of other measures such as manufacturing process changes, substitution of less toxic chemicals, in-plant treatment and recycling.

Where a discharge point has additional site-specific receiving water quality problems, more stringent effluent limits will be established based on adverse water quality impact.

Periodic review of effluent limits will be carried out. New and lower effluent limits will be imposed if more effective technologies (i.e. improved BAT(EA)) become available or if adverse effects on receiving water quality (resulting from discharges) are detected.

Through this process of on-going evaluation and step-by-step reductions, MISA's ultimate goal to virtually eliminate the discharge of toxic contaminants will be achieved.

Virtual elimination of toxic contaminants is a goal of the MISA program and as such was outlined in the White Paper (June, 1986). The White Paper explains the philosophy of the MISA program. The effluent monitoring regulation is a regulatory document which imposes duties on dischargers and is a tool to achieve the goal of virtual elimination of contaminants.

Comment 2: (Industry)

We recommend that the development of the Limits Regulation be scheduled in such a way as to make full use of the data base developed in the effluent monitoring regulation.

Response:

Information generated during the monitoring period will produce a data base on contaminants discharged across Ontario. The Ministry will use the data from the effluent monitoring regulation to its full advantage in developing effluent limits.

Comment 3: (Industrial Association)

We recognize the need to begin the process of OPA/MAC/MOE consultation and writing of a draft effluent limits regulations prior to the completion of a effluent monitoring program. However, all the effluent loading data in conjunction with toxicity should be evaluated before setting BAT(EA) limits for refinery effluents.

Response:

The MISA program is committed to setting effluent limits based on sound technical judgement and therefore the results from the effluent monitoring regulation will be used in that way. This does not mean that the development of effluent limits can not commence in advance of having all of the results. However, the effluent limits regulation would not be finalized prior to receiving all of the data from the effluent monitoring regulation.

Comment 4: (Private Citizen)

I suggest monitoring of toxic chemicals in the effluent stream continually by using a catalyst which would change color in the presence of toxic chemicals.

Response:

The Ministry is not aware of the existence of such a catalyst. However, the Ministry is looking for operational parameters or on-line spill monitors which will quickly indicate any plant upsets which may result in contaminant discharge.

2.19 PROGRAM COSTS

Comment 1: (Government Agencies)

From the accompanying Bulletin "Stopping Water Pollution at its Source", we read "Costs incurred by the regulation will be borne by industry. Refineries will require sampling, flow measurement and analytical instruments. Additional staff may also be required."

We (Municipalities) are concerned about the costs incurred by the regulation. The implementation of MISA program will require the expenditure of millions of dollars. This capital cost and the cost of monitoring and managing is far beyond the financial capabilities of municipal governments.

Response:

The Petroleum Regulation applies to effluents which are discharged to the natural environment (direct discharges). The regulation does not regulate the sampling of effluents which are discharged to municipal sewer systems (indirect discharges). Municipal sewer systems are expected to be regulated by a comprehensive sewer use program which is under development as outlined in the MISA White Paper. During development of the Sewer Use Control Program, an economic assessment of the costs, effectiveness and financial effects of various sewer use control options will be carried out. These program options will include cost distribution effects and financing alternatives. Economic assessments of the sewer use control will also be included in the forthcoming discussion paper on the Sewer Use Control Program.

Comment 2: (Government Agencies)

It is in the best interest of the Government of Ontario to reduce pollution in the Great Lakes, through the mandate of the Ministry proposing the MISA program.

The Great Lakes Mayors' Committee hereby calls upon the provincial government, the Honorable Jim Bradley, M.P.P., to commit the province of Ontario to providing the financial resources necessary to realize full implementation of the MISA program.

Response:

The government of Ontario is developing a program called Loans for Environmental Defence (LEND). This program is intended to provide financial assistance to offset the cost of compliance in exceptional circumstances. Criteria are being developed for the administration of the multi-million dollar program which would provide loans to cover a portion of the cost of cleanup to companies that demonstrate financial need. Any company accepting such a loan would be required to guarantee both the preservation of jobs and environmental results. The size of the LEND fund will be based on estimates of the dollar amount required to help the number of companies expected to need such assistance. Companies are expected to apply their share for pollution cleanup.

In addition, the Ministry offers grant funding assistance to municipalities for the construction of sewage collection and treatment facilities and expansions or extensions of such works. The level of assistance is between 15% and 33 1/3 % for works in large municipalities (population greater than 7500) and varies according to the environmental significance of the work. The level of assistance is between 33 1/3 % and 85% for small municipalities (population less than or equal to 7500) and varies according to municipal population. All projects must meet certain eligibility and priority criteria to receive funding.

Comment 3: (Private Citizen)

(i) Specific concentrations for each analyte should be stated to enable cost effective evaluation studies. The Ministry should state technologies that can achieve the aforementioned concentrations, so as to ensure that the Ministry is accepting the responsibility of appropriate technology, based on scientific evidence, with its attendant cost. Approved technologies that will accomplish a cost effective method of pollution control are to be stated by the Ministry.

(ii) Capital Cost Allowance (CCA) should be introduced in all MISA regulations and CCA schedules incorporated in the first MISA regulation.

(iii) Socio-economic studies are essential to examine the true costs of introducing costly monitoring and abatement equipment, with staff changes. These costs should be reviewed by the public.

The overall costs to introduce MISA program should be subject to an orderly progression of economic development in the Province.

Response:

(i) The costs of different abatement technologies to specific industrial sectors will be estimated. When the relevant effluent limits regulations are developed, the costs of possible effluent limit requirements can be determined by the Ministry in consultation with industry.

(ii) The Environmental Protection Act does not provide the authority to extend provisions of the Accelerated Capital Cost Allowance. However, some of the equipment that will have to be installed to comply with MISA regulations will be eligible for the Accelerated Capital Cost Allowance (e.g., depreciation over 3 years instead of over 5 to 10 years) under federal and provincial tax legislation.

(iii) A comprehensive economic program has been initiated by the Ministry to generate cost estimates of each of the regulations before they are promulgated, and assess the implications of these costs to firms, industrial sectors, municipalities and public institutions. These investigations are further intended to identify least-cost abatement options to achieve the program objectives. The benefits of the various program elements are also being identified.

2.20 REGULATORY FAIRNESS

Comment 1: (Industrial Association)

Caution must be exercised in applying the frame work of the petroleum refining sector regulation to all other industrial sectors.

Response:

There are some general common requirements for each of the sectors, as specified in the General Regulation, but the program is flexible to accommodate individual sector needs. There is general agreement on the need for caution in applying the framework of the Petroleum Regulation to other sectors. In fact, the draft effluent monitoring regulation for the Organic Chemical Manufacturing Sector has been specifically tailored to each plant's effluent to minimize cost and differs noticeably in its routine monitoring requirements from those in the Petroleum Regulation.

Comment 2: (Industry)

We recommend that the Ministry evaluate the impact of MISA if it is applied to all sectors as structured in the Petroleum Regulation. If this evaluation results in reduction to the regulatory requirements, these should be considered for application to the Petroleum Refinery Sector, particularly in the development of the Limits Regulation.

Response:

The Ministry's staff is conscious of being equitable to all sectors while at the same time trying to obtain the information that is required. The effluent limits regulation will be derived from the results obtained from the one year monitoring period in the specific sector.

Comment 3: (Private Citizen)

It is logical to assume that each refinery, depending upon the type of pollutants in its process effluent and their susceptibility to the existing treatment system, will have to be considered on a case-by-case basis.

Response:

The petroleum refining sector is a relatively uniform sector both in term of plant processes and level of treatment. The Ministry feels that one set of monitoring requirements for the entire sector will provide the information we require from the effluent monitoring regulation.

2.21 EXPLANATORY NOTES

Comment 1: (Industry)

The concept of open characterization which appears worthy, is diluted by paragraph 3 of page 51, where it is conceded that many of the pollutants which are to be analyzed for are not expected to be present. The reason, "... the establishment of a long term data base within a regulatory framework" expresses a desire for number; relevance appears to be of secondary importance.

Response:

It is only through the use of characterization that the Ministry can establish the presence or absence of some of the priority pollutants for which there is currently only a limited data base. The establishment of a long term data base has relevance because it provides us with the information necessary in the ongoing evaluation of chemicals for promotion to the EMPPL.

Comment 2: (Environmental Interest Groups)

We believe there is a need for the Ministry to provide a clear rationale of how the draft regulation was written, what were the considered options, what criteria were used, and why the final contents were chosen. We do not feel the Explanatory Notes in the draft regulation answer all our questions. One main point is how it was decided to exclude certain chemicals, and not the others.

Response:

The original Explanatory Notes have been revised since its release with the draft regulation. The revised document, referred to as the Rationale Document and entitled "Effluent Monitoring Regulations for the Petroleum Refining Sector", is a users' guide for industry and the public. It provides background on the MISA program, MISA strategy, monitoring principles and the rationale used in developing the requirements of the General and Petroleum regulations. We would refer you to that document for full details.

2.22 DISCHARGES TO SEWER SYSTEMS

Comment 1: (Environmental Interest Group)

There is no mention of setting standards for discharge from industry into the municipal sewer system. We believe this should be amended into the regulation as soon as possible.

Response:

The Petroleum Regulation applies to effluents from the petroleum refining sector which are discharged to the natural environment (direct discharges). All the indirect discharges to the municipal sewers will be regulated by the Sewer Use Control Program. A discussion paper outlining the Ministry's proposed Sewer Use Control Program will be released for public review shortly. Under the proposal, provincial regulations will be used to effect the control of indirect dischargers.

Comment 2: (Private Citizen)

The private citizen was concerned about domestic chemicals disposal by consumers and the ignorance of the general public about pollution they can cause themselves. The private citizen suggested an awareness raising program by the Ministry to prevent disposal of oil products into the municipal sewers.

Response:

The Ministry has an aggressive program in place for raising public awareness about the disposal of household hazardous wastes. A guide to implementing household waste collection programs may be obtained from the Waste Management Branch of this Ministry. The Ministry also provides grants to municipalities wishing to implement these programs. Some municipalities have already taken advantage of grants to implement special programs for collecting hazardous household wastes.

Under the MISA Sewer Use Control Program, collection of household chemicals and other household hazardous wastes will be further emphasized. In addition, various means of public education will be considered; one of them could be the the requirement of printing appropriate disposal methods as part of the product labelling.

The discharge of oily liquid wastes to municipal sewers is regulated by specific prohibitions in municipal sewer use by-laws. Although liquid wastes from motor vehicle servicing facilities are exempt from Regulation 309, the General Waste Management Regulation, guidelines for the handling and disposal of these wastes have been developed by the Ministry. The Ministry recommends the recycling of used oils as the preferred option.

2.23 AGRICULTURAL SECTOR

Comment 1: (Private Citizen)

Specific chemicals known to be environmental hazards from the agricultural sector should be specified in all MISA regulations.

Response:

Currently there is a federal, as well as a provincial framework which addresses the environmental release of pesticides through the control of registration, use and sale of these chemicals in Canada and Ontario. The pesticide industry (manufacture, formulators and distributors) will be considered for inclusion as a minor industrial sector under the MISA program at a later date. Furthermore, reporting of presence and quantity of pesticides used by industries in their processes or in process treatment will be considered.

Comment 2: (Private Citizen)

I suggest that: (1) The creeks running through the farms should be fenced off and cattle not allowed access to them. (2) All the barns should have eavestrough. (3) Farmers should not get any government help unless all environmental safeguards are met by them.

Response:

All three suggestions are valid. The Ontario Ministry of Agriculture and Food (OMAF) and the Ministry have a new joint program for farmers, known as the Ontario Soil Conservation and Environmental Protection Assistance Program (OSCEPAP) which provides a share of costs for such projects as fencing, manure and runoff management on the farmstead. The OSCEPAP program will likely cover eavestroughing for barns and other means of diverting clean water around barn lots. The program will run until 1990. As the OSCEPAP program termination date nears, the Ministry is seeking other means of dealing with the cattle access problem. Through OMAF and the Rural Beaches Program, farmers should take advantage of the OSCEPAP program now while it is available. Once the program is over, they may be liable for prosecution under the Ontario Water Resources Act (OWRA).

Although the Ministry agrees with suggestion (3), this is difficult to do. The principle was introduced in the U.S. as part of their 1985 Farm Bill. There are some programs in Ontario which utilize the principle; for example, a farmer receiving a grant for manure storage normally must address the runoff from the barn lot as well. In this way, the Ministry is attempting to get some environmental "leverage" with government funding.

3.0 APPENDICES

APPENDIX 3.1

SUBMISSIONS OF COMMENTS ON THE DRAFT REGULATION

ENVIRONMENTAL INTEREST GROUPS

1. Canadian Environmental Law Association
2. Citizens Organized Against Chemical Hazards
3. Friends of the Earth
4. Great Lakes United
5. Pollution Probe Foundation
6. Sierra Club of Ontario
7. St. Clair River International Citizens' Network
8. Windsor & District Clean Water Alliance

GOVERNMENT AGENCIES

1. Alberta Environment
2. The City of Calgary, Engineering Department
3. The Corporation of the City of Windsor
4. Fisheries and Oceans, Great Lakes Laboratory for Fisheries & Aquatic Sciences
5. The Municipality of Metropolitan Toronto
6. New York State Department of Environmental Conservation

INDUSTRIAL ASSOCIATIONS

1. The Canadian Chemical Producers' Association
2. Ontario Forest Industries Association
3. Ontario Petroleum Association

INDUSTRIES

1. Esso Petroleum Canada, A Division of Imperial Oil Limited
2. Ontario Hydro
3. Petrosar Limited

PRIVATE CITIZENS

1. H. Bergeron
2. L. Galipeau-Krywionek
3. D.R. Lee & K. Lee
4. P. Marras
5. J. Miller
6. Dr. H.S. Pal
7. J.N. Schauenberg
8. S. Vores
9. Dr. K.D. Walford
10. D. Wilson

PROFESSIONAL CONSULTING COMPANIES

1. MacLaren Plansearch Inc.
2. Methodologies Consultations Limited

RESEARCH COMPANIES

1. B.C. Research
2. Ontario Research Foundation

UNIVERSITY

1. Carleton University - D.R. Willes

APPENDIX 3.2

OPEN CHARACTERIZATION OF EFFLUENTS

The detection limit achievable for open characterization of organic compounds depends upon the sample size, concentration factor, efficiency of extraction from the original matrix, GC/MS conditions, overall complexity of the sample, degree of chromatographic resolution from other co-extractives and the mass spectral characteristics of specific compounds. Due to the many complex variables involved, compounds extracted from a 1.0 L sample may be identifiable at concentrations as low as 1-5 parts per billion (ppb). In other cases, identification may require concentrations of components to be 50 ppb or greater. In the majority of cases, 10-20 ppb concentrations are sufficient.

The Ministry's intention in the MISA program is to identify as many compounds as possible that can be extracted (or purged) from the supplied sample. A target detection limit for this work has been set as close to 1 ppb as possible on a sample to sample basis. However, there may be instances where substances cannot be identified at these levels. In most instances, 10-50 ppb of each component will be required. Accurate concentrations for such identified components cannot be generated because standard solutions for newly-identified contaminants will probably not be immediately available. The Ministry is developing a document that describes in detail the criteria involved in organic compound identification by GC/MS.

APPENDIX 3.3

ENSURING LABORATORY COMPETENCE FOR MISA

The effluent monitoring regulations place the onus on industry to exert due diligence in the selection of laboratories. They also define the types of quality assurance activities expected of both industry and the laboratory. The sampling QA/QC data must be reported to the Ministry. The laboratory's QA/QC data must be retained by industry for audit by Ministry personnel as the need arises.

The Ministry does not wish to interfere in the contractual arrangements between industry and the laboratory nor in their day-to-day operations. But the Ministry retains the right to audit field and laboratory practices to evaluate their ability to provide the data quality required. Acceptability of the data will be based on the ability of the industry and laboratory to justify their methodologies and to provide evidence of control. This will be backed up by field audits and analysis of a limited number of audit samples taken during such inspections.

The Ministry expects laboratory managers to act professionally in meeting their obligations to provide evidence of the quality of their work. Concerned analysts will participate in inter-laboratory comparison studies and make regular use of reference materials to establish and maintain measurement accuracy and analytical recovery. They will be able to provide an appropriate description of their operation including sample and data management practices, analytical methodologies and quality assurance and quality control procedures on request. Good laboratory practice requires selection and implementation of appropriate quality control and quality documentation practices, such as control charting. The actual selection of what control data should be charted depends on the behavior of the system and the quality of data required. Absence of such information will be taken as evidence of lack of due diligence